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THE ELEMENTARY SCHOOL TEACHER AND COURSE OF STUDY

APRIL, 1902

THE SCHOOL GARDEN.

WILBUR S. JACKMAN.

THE school garden is a useful accessory in the study of nature, whether considered from the æsthetic, the economic, or the botanical point of view. The first named doubtless offers the strongest attractions to both teacher and pupils, but it is by no means the most important aspect of the subject. For without due regard to the habits of plants, their special adaptations to soil, light, heat, air, and to each other, the garden certainly cannot grow into a thing of beauty. No amount of skill bestowed upon the beds and walks can make up for a lack of harmony—happiness one might say—among the plants themselves. The moderate scale upon which most school gardens must be planned precludes the possibility of the development of much economic value, except so far as a variety of useful plants may be grown with a view to illustrating some of the many different plant structures upon which man so largely depends for food and clothing.

The chief reason why the school garden often falls short of the hopes of those who plan for it is that its projectors usually greatly underestimate the attention and labor which it should receive. Gardening is one of the highest arts, and there can be no more serious mistake than to suppose it is only necessary to plant the seeds and let them grow. Bacon said long ago that

men come to build stately sooner than to garden finely. It should be remembered in the outset that, in several senses, a garden represents a war with nature as the latter term is usually understood.

In the first place, it is commonly made up of plants that have been drawn from remote parts of the earth, often from places having diverse climatic conditions. These are all expected to grow within a limited area for which, naturally, they are not specially suited, and their "personal" objections are supposed to be overcome chiefly by artificial means and by processes known as cultivation and forcing. Cultivated plants can never be made to forget the ancient haunts of their ancestors. The one, therefore, that flourished best in primeval times in marshy soil will never feel quite at home in a dry, loamy garden alongside of a plant that has been enticed away from a sandy ridge. Nor will a plant which has been kidnaped from a warmer climate take kindly to a yoke-fellow that has spent countless ages in learning how to outwit the north wind.

In the second place, almost every cultivated plant may be regarded as either a freak or a genius; usually it exhibits all the eccentricities of both types. Man, in looking selfishly after his own ends, in many instances has seriously interfered with the ancient and prosaic process of seed production, which comprises the whole of a plant's ambition in the wild state. Even where the want of the gardener and the need of the plant meet in the same thing, as in the seed, in some underground forms and in many flowers, these parts are forced by the tricks of cultivation to a point in size and numbers that the plants could not sustain for a single season if they were left to battle alone with the elements and with their natural enemies. Thus, the potato, as well as the turnip, parsnip, and other roots; the cabbage, kale, kohlrabi, and other leaves and stems; the peas, beans, and other seeds, in their present marketable form, represent the ambition of the gardener rather than the needs of the plants themselves. The distortion and exaggeration of the normal form found in the majority of cultivated plants represent with fair directness the modification of the natural conditions under which these

plants are produced. If members of the vegetable world were endowed with reflective powers, they would certainly view some of the results obtained by the gardener with alarm; as, for example, the production of the "seedless fruit" and the double flower, in which the original purpose of this particular part is entirely defeated.

Again, it should be remembered that cultivated plants are not only herded together without much regard for their natural affinities, but they are set down in a place which in most cases was pre-empted ages ago by other plants that have learned thoroughly how to take care of themselves on that particular spot. It has been part of the business of these plants to kill off without mercy all members of any weakling tribe that might appear among them. The enormous strength with which these "natives" literally hold their ground is evidenced by the fact that the gardener's favorites must be aided and protected by the active and vigilant use of the best instruments yet devised by the wit of man for the extermination of weeds in order to carry the cultivated crop to a successful issue. There is no more striking illustration than this of the trouble one may expect if he interferes with one of nature's established ways.

In designing a garden in connection with an ordinary school, therefore, three things should be observed: (1) Select plants which do not represent a wide diversity of habit unless the garden will lend itself to a variety of conditions as to water, sunshine, and soil; (2) select plants which represent fairly well-established stages of cultivation, that is, avoid the so-called novelties unless there is ample provision for unusual attention; (3) allow plenty of time for systematic care; odds and ends of time will not do; the weeds do not grow by fits and starts.

For the æsthetic effects of a garden most people will depend upon the flowers and ornamental foliage plants. Several arrangements may be suggested which will commend themselves according to the taste and opportunities of different individuals.

In the plan shown in the March number it is proposed to use the central circular space for the flowers, giving a wedge-like section to each grade. At the inner end of each bed there will be planted a castor bean; at a suitable

distance from this, moving outward, there will be a calladium; next there will be a ring of salvias, then cornflowers, verbenas, and a border of phlox or sweet alyssum. By this selection and distribution the bed will have the two features of ornamental foliage and flowers which is made possible by its large size. The flowering will begin rather early and, by the choice of plants, will be continued until frost. The order decided upon will give each different kind of plant a fair opportunity for growth.

The four adjacent areas on either side of the flower bed — one for each grade — will be devoted to plants selected for their economic value. Such plants have been selected as will be useful in preparing the children's luncheons next year. To this end each plot, twenty feet square, will be devoted to one or two kinds of plants, and the grade caring for it will be responsible to the entire school for the result. The plants chosen are beans, peas, potatoes, cabbage, carrots, parsnips, beets, tomatoes, turnips, onions, peppers, cucumbers (for pickles), and corn. Radishes and lettuce will be sown in certain spots not available for other plants. It is proposed here to show, for example, the great debt of mankind to the *cruciferae*. There is no part of the plant body that has not been developed in different members of this useful family for the food of man. Thus, in the turnip and radish, the root; in the cabbage, the leaves. The *solanaceae* will be represented by the tomato, potato, and pepper, the innocuous but useful relatives of the poisonous nightshade. The parsnip and the carrot will represent the *umbelliferae*, and beets will strive for the ascendency with their wild and vigorous relative, the pigweed of the goosefoot family, or *chenopodiacae*. The peas and beans are the favorites chosen from the *Legumuinosae*, an interesting family of plants, both useful and ornamental.

The four areas at the opposite ends of the garden will be devoted to various members of the grass family — maize, wheat, oats, rye, barley, broom corn, and sorghum, and a small strip will be sown with flax. Later in the season some space must be found for buckwheat, the most useful member belonging to that family of gutter snipes, the smartweeds. The same aspects for study will be presented by the plants cultivated for their flowers.

In connection with this part of the garden work there are three interesting lines of study: (1) The original habits of the plant in its wild state, and its near relatives that now may be found growing wild; (2) the steps in cultivation and the conditions provided which have developed the cultivated form; (3) the nature, constitution, the relative value, and the distribution of the food product thus obtained.

Another point of view from which the garden as a whole will be studied is from that of the actual problems which the

different plants must solve in the process of growth during different periods of the season. These problems are alike to all the plants cultivated in the garden, though differing somewhat in degree of importance. They arise mainly (1) from the plant's efforts to establish helpful relations with sunshine, meaning both light and heat; (2) with the soil for support and as a water reservoir, as well as for the sake of small quantities of minerals; and (3) with the atmosphere as a reservoir of oxygen and food supply.

The clew to a solution of the problems falling under (1) and (3) will be found chiefly in a study of the leaves, including their mode of attachment, their position, relative size, shape, margin, arrangement, structure, and movements. The problems involved in (2) are to be worked out through careful observation of the root, beginning when it leaves the sprouting seed.

Certain movements of the plants will be shown by the various kinds of climbers that are to be trained up the walls of the schoolhouse. The amount of work done by the plants may be approximately calculated from data gathered by growing plants under special conditions. Thus, the amount of water discharged through the leaves may be found by growing a plant in a wide-mouthed bottle closed about the stem so as to prevent evaporation. By weighing at intervals, placing the plant now in sunshine, now in shade, the loss noted will be from transpiration, and the quantity of water can be measured out so the pupils may see it. Plants may be weighed fresh and afterwards dried and weighed again, then burned, thus giving an idea of the water and of the dry, solid, and mineral matter built up during any given period of its development.

Again, the resources upon which the plant must draw for materials may be investigated through a study of the soil, rainfall, temperature, slant and distribution of the sunshine. The gist of the whole study under this head is (1) to see how the plants suit their problems to the seasons: germination to the cool, moist April and May; the rapid development of leaf and flower to the long, bright, hot days of June and July, and the filling up of the seed to the early autumn; and (2) to observe

how they manage to resist the encroachments of each other and to use each as they all together take possession practically of the whole earth.

REFERENCES: Bailey, *Garden Making;* Coulter, *Plant Relations; Origin of Cultivated Plants.*

THE INDIVIDUAL ELEMENT IN THE TEACHING OF ARITHMETIC.

GEORGE W. MYERS.

IN educational gatherings, where the teaching of arithmetic is discussed, we are often told how this, that, or the other teacher has found the children attack an arithmetical topic. We are often given the precise form of the child's questions. The certainty with which teachers assure us that they have found the true method of the child, together with the contradictory character of their discoveries, leads us to doubt seriously whether we shall ever arrive at an agreement as to what "the method of the child" really is. There are those who doubt whether there exists any single method in arithmetic which may be regarded as "the method of the child." It seems quite clear from the questions of arithmetic classes that we may speak of "methods of children;" but this is a very different thing from "*the* method of the child," as commonly understood.

We recognize in theory that a peculiar caste of mind—a particular bent—arises from the particular environment and antecedent training of each pupil; but this does not seem to lay vital hold of our class-room practice in the elementary mathematics. Indeed, the teacher's conception of his office as teacher may be pretty accurately gauged from the extent to which he allows the individual element to control his practice. If this element control but slightly, he will regard his function as that of a taskmaster, to dole out to his imaginary average pupil the daily stint and then to act as a recitation post on the morrow. The text-book, which, in the nature of the case, must present its subject-matter largely with reference to the average pupil, must do the teaching. The taskmaster may even go so far as to

include in his category of duties the obligation to encourage the pupil, both by rewards and penalties, to cover from day to day as much subject-matter as possible. This is to some teachers a comfortable conception of the teacher's office, but it is a very inadequate conception. It results in the artisan teacher.

On the other hand, if the individual element is given wide and free scope, the horizon of the teacher's function recedes indefinitely. He becomes the guide, the leader, the organizer, the creator. He uses the text instead of allowing it to use him. He pours the subject-matter of his teaching through the crucibles of his own mind, gives to it what the chemist calls a combining temperature, recreates it, breathes into it the breath of life, and makes it a vitalizing force in the thought-life of the pupil. This teacher is alert to seize upon the educative aspects of the environment, both past and present, of each pupil, and is ever struggling to heighten his skill to use this environment effectually. He uses the text-book, in some sense, as a half-way station between the advancing column of growing boys and girls and the great base of supplies in which the boys and girls live, move, and have their being. The school could ill afford to substitute the text-book for such a teacher; for he is the architect of human character. He is the artist teacher.

But when it is admitted that there is no single method of the child, the teacher's necessity for studying the way each child deals with the subject-matter of arithmetic is in no way lessened. Such admission demands merely that the emphasis be shifted from *the* method to the child—*this* child. It demands that each child be studied, and that the method which constitutes the object of the teacher's search shall be the method of this individual child. So far from contracting the scope of child-study for the teacher of arithmetic, the denial of the universal adaptability of one method extends it for each teacher as many fold as there are pupils to come under the influence of his teaching. The teacher's problem is not to work out a theory of education which fits the facts of the life of a child of some professor, or teacher of psychology, even though these facts have gotten into printed form. If it were possible to arrive at the ideal

educational scheme by generalizing from the facts concerning individual children, no one child, nor ten children, nor one hundred children, could furnish facts of sufficient range, variety, and scope for a reliable generalization. At present, and no doubt for many years yet, all courses of study, all educational schemes, must have in them flexibility enough to yield to the needs of *this* pupil. The only successful method of dealing with this pupil must be determined by the teacher who has him in charge.

These things are accepted as true, if not trite, for nearly all subjects of the elementary curriculum save mathematics. There is still a widespread disposition to doubt their application here. We still seem possessed of the opinion that there is one and only one way of presenting mathematics in the elementary school. We deem it our business to search out this *one* method. Too many even think they have found it. If one-third or one-half of the pupils, after being treated by this method, fail to yield gratifying mathematical results, so much the worse for this third or half. Unfortunately, we say, these were handicapped by nature in being left number-blind. Is it not just possible, inasmuch as most of these mathematical failures make successes in life, that we, the sticklers for special methods, deserve the sympathy we bestow upon these so-called unfortunates more than they do? It would certainly seem the wiser practice to accept the child as a fact and to question the adequacy of the method.

Occasionally we do grow skeptical as to whether this method, which has to its credit or debit so many failures, is not partially to blame for the "mortality list." We accordingly seize some other principle, unduly magnify it, seek to organize all the principles of arithmetic around it, and label the product "a new method." We are now quite sure, for a brief space, that we have the panacea. Results, however, are again disappointing; and then another method and another, and so on.

The escape from this thraldom of mathematical teaching to special methods lies in the direction of a recognition that even elementary mathematics is too broad to be spelled out by any single principle, and that it is the chief business of the teacher to ascertain the most advantageous method for each pupil.

Having found it for a given case, he must not base generalizations too freely upon it.

Give the pupil access to the largest possible region of really practical and interesting subject-matter, turn him loose and study his mental peculiarities as revealed through his spontaneous activities. Refrain at every point from asking the pupil questions, to answer which would require him to think his own thought processes. Let him *do the work* without much, if any, analysis of thought processes.

Most of what is said here is old in its relation to the unmathematical subjects. It is said here merely to emphasize its relevancy to mathematical teaching. The general refusal of mathematical teachers to recognize this is throwing mathematical teaching into the rear of educational advance.

Questions such as are discussed in this paper will constitute the main part of the work of the teachers' professional course during the spring quarter. The other course will be for beginners in the professional school, and will be largely, though not exclusively, academic in character.

The study of subject-matter will be from a higher point of view than can be taken by the elementary pupil, who is mainly concerned with learning a limited part of the subject each day. The teacher must perform the office of director, and this can be done only in the light of clearly conceived principles, based upon a broader and fuller view of the subject in its entirety.

ART.

JOHN DUNCAN.

THE art in the School of Education divides itself naturally into two classes: (1) Art illustrative of the other subjects of the curriculum — history and literature, geography and nature study; (2) applied art, the making of things — pottery, fabrics, and furniture.

ILLUSTRATIVE ART.

The substantial aid that drawing, painting, and modeling render in making these studies more concrete and tangible

becomes clearer and clearer every day. In geography and nature study, in history and literature, modeling and drawing are now found to be quite indispensable, affording the teacher a means of studying the students' consciousness, an immediate means of arriving at his appreciation, or want of appreciation, of the facts, and his feelings with regard to them, a more transparent medium than writing, not only helping these studies out into more definition and detail, but also drawing them into synthetic relations with each other, helping the specialisms, on the one hand, and, on the other, fusing them into a larger unity — philosophy. Art is concrete, graphic, tangible philosophy.

This illustrative drawing, as we practice it in our school, is again of three kinds.

1. Blackboard drawing, in which the student expresses the images of which he is already in possession. The aim of the drawing is its reaction on his own and on his neighbor's thought, and the co-ordination of his own images among themselves.

2. Sketching from nature, which is a means of attention.

3. Drawing on paper or canvas synthetic pictures, in which the student builds together the results of his observation, his thinking, and his feeling.

GEOGRAPHY.

1. Blackboard drawing — Chalk modeling: maps; typical topographic forms; scenes and landscapes from all the countries of the world.

2. Sketching from nature on field trips.

3. Decorative pictures and models of topographic forms and picture books of typical scenes and peoples.

NATURE STUDY.

1. Sketching: Landscape; trees; leaves; flowers, fruits, seeds; animals from life and from museum specimens; atmospheric conditions — clouds, rain, snow.

2. Blackboard drawing: Landscape; etc.

3. Decorative pictures and models and picture-books: The procession of the year; the life-history of individual plants and animals; plant and animal relations; the prairie, the swamp, the sand-dune.

HISTORY.

1. Blackboard drawing: Primitive history; Greek mythology, games, architecture; arts of Middle Ages and Renaissance; the castle and cathedral; the knight and priest and burgher.

2. Sketching: Streets, buildings; occupations of men; museum material.
3. Picture-book making: Decorative pictures and models; history of civilization.

The first two kinds of drawing, blackboard drawing and sketching from nature, are not sustained efforts, and are best carried on in the recitation room or on the field excursion under the inspiration of the teacher of the subject-matter—history, geography, or whatever it may be. In this way, and in this way only, the student can feel the push of a genuine motive. The ideal is, undoubtedly, that the teacher of the subject-matter should control also the expression, but till the teacher attains to the ability to do so a special art teacher must take hold of it and work together with him. This is, of course, uneconomical, and means a certain amount of friction, but would seem to be the only practicable way of working at present.

With the more sustained form of drawing and modeling, indicated in the third class, we have had very little success. This is, I am persuaded, due to the absence of a motive that the student can strongly enough appreciate. I am convinced that the only solution of this difficulty—and it is the one that stops the way completely for any full art expression in the upper grades and in the pedagogic school—is to find some real purpose to which to devote the products of so long-continued an effort as is necessary to make even the simplest drawing or piece of modeling. This effort is usually much underestimated by people who have never made it themselves.

I would suggest that all the sustained art work of the school be applied to some worthy and appreciable end, to the decoration of schools and the making of picture books which are to go out into the world through a publisher who may be in or outside of the school; all the subject-matter and illustrations worked up in the class-rooms to be poured through the school press, passing on the way through processes of successive editing.

This idea would be no less fruitful applied to the literary and scientific work of the school. Self-activity is one of the watchwords of the school. The work is not prescribed and formal. The school is a laboratory of thought where each sup-

plements the labor of the others. To round out, complete, and publish the results of this activity would seem only rational. At present there is a great waste of much that would prove very valuable to other institutions everywhere, schools, kindergartens, and homes. The matter needs only organization.

As our school is at present constituted we do not have the people who have the leisure to apply themselves to this work. It means really the addition to our present school, of special literary and artistic students. This would be a unique class for the training of teachers of literature and of art, for no one can be a true teacher who does not practice what he preaches. The work of this literary-and-art group would be the publication of text-books, story-books, maps, and pictures for the use of children everywhere.

The literature available for children is for the most part very dry and didactic. The societies for child-study have given us a new conception of childhood, and no merely commercial house can meet the newly discovered needs that have come with a deeper insight into the child soul. We believe now that nothing is too good for the little folks, that their budding curiosity is a true scientific attitude, and their real likes and dislikes are æsthetic impulses more sensitive and discriminating than those of most adults, who are, of course, all more or less perverted. Too long we have put the children off with pseudo science and bogus art.

Every teacher will agree that there is a sad want of good illustrative pictures and models for schoolroom purposes. A number of educational publishers are addressing themselves to this problem, but none of them are in close enough touch with the schools to appreciate their needs as they arise, still less to anticipate them. Illustrative pictures are at present drawn from newspapers and magazines, and are usually rather small for schoolroom use. Decorative pictures practically do not exist. There are only a very limited number of possible pictures in color—one could enumerate all that are on the market—and the same pictures are met everywhere, in all the picture stores and in all the schoolrooms; for the teachers are greedy for

them and have made good use of every picture that is to be had. The only other pictures that one can get are photographs, mostly of Old Masters, that make dark blots on the walls and are little adapted to the place or purpose they pretend to fill.

It might be urged that the prime usefulness of this work is in the doing of it, and that the outside schools to which the products of our activity are directed would not share fully the educational advantages with us. That is, of course, true, and we may hope for a time when all the schools shall be engaged in similar productive activities. When that time comes there can be interchange of commodities, and we can extend our market beyond the walls of schoolrooms themselves and make things that will be useful in the larger world outside. We, however, will be early on the field, and we have in the needs of the schools as they are situated at present an ample opportunity and a mission.

APPLIED ART.

I have already indicated that most of the work of the art department will be *applied*. The only exceptions are the blackboard drawing and the sketching from nature, and these are both feeders to the applied art, preparing the way for the more finished pictures for publication.

Press work; printing and drawing for reproduction.—The work in preparing material, scientific, literary, and artistic, for the press and the printing of it, will, we believe, soon form the core of the applied art work of the school. In an institution given up so largely to intellectual affairs, this is obviously the best place to begin; the relation of the press to subject-matter being more immediately apparent to all than that of any other applied art.

A group of activities will form themselves about the press as a center.

Bookbinding and illumination naturally relate themselves to the work of the press.

The work in *Pottery*, in *Textiles*, and in *Furniture* has been described in former issues of this journal.

HISTORY.

VIOLA DERATT.

OUTLINE FOR A YEAR'S WORK IN HISTORY OF THE UNITED STATES. SEVENTH OR EIGHTH GRADE.

OCTOBER.

EXPLORATION of the Mississippi valley: Marquette, Joliet, La Salle, Hennepin, Iberville.

French settlements: Kaskaskia, Fort Chartres, Prairie du Rocher, Vincennes, New Orleans, St. Louis.

The geography of the region from the standpoint of its part in the development of the nation. La Salle's view of the importance of the Mississippi valley. The Great Lakes, the Mississippi, and the Ohio as pathways of communication with the seaboard. The Appalachians as an obstacle. The supposed water route to China. Study old maps of the continent showing ideas prevailing before the explorations.

Pictures and descriptions of forts, trading-posts, stockaded villages, costume, weapons, camps, means of transportation, scenery.

The French court; Jesuit missions; fur-traders; coureurs de bois; French method of residence, land-holding, and tillage.

A study of the French and Indian War as it affected this region. Story of Rocheblave; of Pontiac.

Study of the drainage canal. The interior decorations of the Marquette building, Chicago. Visit the Chicago libraries and find out how to use them.

Make relief map of the region, draw pictures of scenery and costume involved, and illustrate the stories read. Make a model of the typical fort of the time.

REFERENCES: Children's reading list: Catherwood, *Story of Tonty, Heroes of the Middle West, The Little Renault;* McMurray, *Pioneer History Stories;* Parkman, *La Salle and the Great West;* "Father Marquette at Chicago," *Old South Leaflets;* Drake, *Making of the Great West;* Shea, *Discovery and Exploration of the Mississippi Valley* (Maynard & Merrill pamphlets); *Rocheblave, Fort Chartres, Old Kaskaskia,* "Fergus Papers" (Chicago Historical Society): King, *Iberville;* Higginson, *The Legends of the Northmen;* Parton, *Captains of Industry;* Baldwin, *The Conquest of the Old Northwest.*

Teacher's reading list: Winsor, *Narrative and Critical History of America,* Vols. IV–VI; Parkman, *La Salle and the Great West, Old Régime in Canada, The Conspiracy of Pontiac;* Perkins, *Annals of the West;* Hinsdale, *Old Northwest;* Winsor, *Mississippi Basin;* Cooley, *Michigan;* Turner, "The significance of the frontier in history" (Fifth *Herbartian Yearbook*); Carr, *Missouri;* Scharf, *St. Louis,* Vol. 1; Shaler, *Nature and Man in America;* Flint, T., *Residence and Journeyings in the Valley of the Mississippi;* Bradley, *The Fight with France for North America;* Monette, J. W., *Valley of the Mississippi;* Gaspé, *The Canadians of Old;* McLennan,

In Old France and New; Thwaites, *Jesuit Relations;* Bartlett and Lyon, *La Salle in the Valley of the St. Joseph;* Severance, *Old Trails on the Niagara Frontier.*

"A Canadian Habitant," *Harper's Magazine,* 67 : 375; "A Story of Canada (1674)," *ibid.,* 87 : 609; "The Romance of Spanish and French Explorers," *ibid.,* 64 : 438; "Iberville and the Mississippi," *ibid.,* 89 : 722; "The Overthrow of the French Power in America," *ibid.,* 65 : 97; "French and Indian War," *ibid.,* 70 : 583; "Pontiac," *ibid,* 95 : 77; "Scenes from the Life of Louis XIV.," *ibid.,* 7 : 475; "The Palaces of France," *ibid.,* 5 : 596; "Laval, the First Bishop of Quebec," *New England Magazine,* 22 : 297; "La Salle's Homestead at La Chine," *ibid.,* 24 : 445; "The Little Renault," *Century,* 20 : 556; "A French Canadian Trapper," *ibid.,* 14 : 834; "La Salle's Homestead at La Chine," *Magazine of American History,* Dec. 1890 : 449; "Old Town of Green Bay," *ibid.,* May, 1890 : 376; "The French Peasantry," *ibid.,* Aug. and Nov., 1890 : 126, 365.

NOVEMBER.

The westward movement : study the possible routes from the seaboard, through the mountains, to the interior. The stories of Boone and Kenton.

Industry and commerce in the colonies to 1790 : lumber, shipbuilding, iron, textiles, glass, printing, agriculture.

English laws for the obstruction of American commerce. The Revolution as seen from the West. Battle of King's Mountain. Clark's expedition to Vincennes.

Make pictures of colonial industries. Continue the map to include the colonies and to show routes westward.

Visit printing office in order to compare scope of a present industry with that of a colonial industry.

REFERENCES : Children's reading list : Wright, *Children's Stories of American Progress;* Roosevelt, "Episodes from *The Winning of the West;*" McMaster, *History of the United States;* Hildreth, *Pioneer History Stories;* Strickland, *Pioneers of the West;* Flint, *Daniel Boone;* Inman, *A Pioneer from Kentucky;* Bogart, *Daniel Boone;* Roosevelt and Cabot, *Hero Tales from American History;* Abbott, J. S., *American Pioneers and Patriots;* Howells, *Recollections of Life in Ohio;* Drake, D., *Pioneer Life in Kentucky;* Drake, S. A., *The Making of the Ohio Valley States; Menasseh Cutler's Description of Ohio (1787), Washington's Journal of His Tour to the Ohio in 1770, Clark's Account of the Capture of Vincennes* "Old South Leaflets."

Teacher's reading list : Roosevelt, *Winning of the West;* Perkins, *Annals of the West;* Drake, *Making of the Great West;* Winsor, *Westward Movement;* Channing and Hart, *Guide to American History;* Birbeck and Flower, *History of the English Settlements in Edwards County;* Bradford, *Notes on the Northwest;* Breckenridge, *Recollections of the West;* Barber, *History of the Western States;* Wright, *Industrial Evolution of the United States;* Hulbert, *Redmen's Roads; Indian Thoroughfares of the Middle West;* Johnson, *The First Exploration of Kentucky;* Kaler, *On the Kentucky Frontier;* Flandran, *History of Minnesota and Tales of the Frontier;* Halsey, *The Old New York Frontier.*

"George Rogers Clark," *Harper's Magazine,* 22 : 784; 23 : 52; "The Great Western March," *ibid.,* 69 : 122; "Earliest Settlements in Ohio," *ibid..* 71 : 552; "On the Outposts," *ibid.,* 76 : 420; "Kentucky," *ibid.,* 78 : 255; "Locomotion, Past and

Present," *ibid.*, 46 : 161 ; "The First Century of the Republic," *ibid.*, 49 : 861 ; "Ohio," *ibid.*, 93 : 286 ; "Blue Grass Region of Kentucky," *ibid.*, 72 : 386 ; "Cleveland," *ibid.*, 72 : 561 ; "Kentucky Pioneers," *ibid.*, 75 : 48 ; "In the Footprints of the Pioneers," *ibid.*, 18 : 741 ; "Pioneers of Kentucky," *ibid.*, 25 : 577 ; "Simon Kenton," *ibid.*, 28 : 289 ; "Boone," *ibid.*, 28 : 293 ; 19 : 577 ; "Joe Daviess of Kentucky," *ibid.*, 21 : 341 ; "The Homespun Age," *New England Magazine*, 25 : 429 ; "A Pioneer and His Corn Patch, *ibid.*, 22 : 450 ; "Story of Cleveland, Ohio," *ibid.*, 20 : 739 ; "A Journey to Marietta (1794)," *ibid.*, 19 : 642 ; "Kentucky's Pioneer Town," *ibid.*, 7 : 750 ; "Boone," *ibid.*, 16 : 25 ; "Emigration to the Ohio Country," *ibid.*, 21 : 695 ; "Log Cabin Life in Early Ohio," *Magazine of American History*," Aug. 1890 : 101 ; "The Buffalo Range," *Harper's Magazine*, 38 : 147 ; "Husbandry in Colony Times," *ibid.*, 5 : 431 ; "Commerce in the Colonies, *ibid.*, 6 : 234 ; "The Colonists at Home," (costume) *ibid.*, 7 : 873.

DECEMBER.

The government: Old Philadelphia ; pictures, description, map. The meeting of the constitutional convention. Debates on representation: large states and small ; slaves ; regulation of commerce.

Old New York: pictures, descriptions, map. The inauguration of Washington.

REFERENCES (children's reading list): Moore, *From Colony to Commonwealth;* Coffin, *Building of the Nation;* Allen and Brumbaugh, *Story of Pennsylvania;* Irving, *Life of Washington* (edited by Fiske); Scudder, *Washington;* Butterworth, *In the Days of Jefferson;* King, *The Land We Live In.*

Teachers' reading list: Rhoades, *The Story of Philadelphia;* Watson, *Jefferson;* Morse, *Jefferson;* Parton, *Jefferson;* Lodge, *Hamilton;* Hart, *Epochs of American History;* Hart, *American History Told by Contemporaries*, Vol. II ; McMaster, *With the Fathers;* "After the Revolution," *Harper's Magazine*, 68 : 238; "George Washington in New York," *ibid.*, 68 : 420; "The Growth of the Federal Power," *ibid.*, 85 : 240; "Philadelphia as the Capital of the United States," *ibid.*, 89 : 863; "Snap Shots at the Olden Time," *ibid.*, 89 : 285; "Jefferson," *ibid.*, 53 : 211; "Jefferson," *ibid.*, 26 : 833; "Brooklyn in 1810," *ibid*, 25 : 324; "New York in the Revolution," *ibid.*, 37 : 180; "Independence Hall," *ibid.*, 35 : 217; "Newspaper Curiosities," *ibid.*, 35 : 482; "The Generations of Fashions," *ibid.*, 9 : 749; "New York when Washington was President," *New England Magazine*, 21 : 90; "Old Public Buildings" (New York city), *Harper's Magazine*, 5 : 677.

JANUARY.

The Northwest explored and brought into relation with the East; the Lewis and Clarke expedition ; Astoria and the fur trade; improvements in transportation ; the steamboat and turnpike.

Use of water-power on the Atlantic slope ; a New England manufacturing town (Lowell); the spinning jenny, power-loom, cotton-gin. Cattle raising in the West. Cotton, sugar, rice, tobacco, slave-trade. Picture a southern plantation.

Extend the relief map westward and study routes of early travel, comparing with present routes. Draw pictures showing characteristic features of New England, southern, and western life.

REFERENCES (children's reading list): Sparks, *Expansion of the American People;* Chase and Clow, *Stories of Industry*, Part II; King, *The Land We Live In*, Part I; Robinson, *Loom and Spindle;* Wright, *Children's Stories of American Progress;* Eggleston, *The Last of the Flat Boats.*

Teachers' reading list: Bennett and Elton, *The History of Corn Milling;* Harris, *Plantation Pageants;* Hotchkiss, *History of the Lumber and Forest Industries of the Northwest;* Wilkinson, *Story of the Cotton Plant;* Coutant, *History of Wyoming;* Schouler, *History of the United States*, Vol. II; McMaster, *History of the People of the United States*, Vol. I; Allen, *Lewis and Clarke;* Barrows, *Oregon;* Irving, *Astoria;* Wright, *Industrial Evolution of the United States;* Greeley, *American Conflict*, chap. I; Hart, *American History Told by Contemporaries*, Vol. III; S. B. Smedes, *Memorials of a Southern Planter;* Coues, *Lewis and Clarke's Expedition;* Perkins, *Annals of the West;* Blanchard, *Discovery and Conquest of the Northwest;* Hammond, *Cotton;* "Cotton and Its Cultivation," *Harper's Magazine*, 8 : 447; "Sugar Regions of Louisiana," *ibid.*, 7 : 746; "Monticello," *ibid.*, 7 : 144; "The Landscape of the South," *ibid.*, 6 : 721; "Sugar Making in Cuba," *ibid.*, 30 : 440; "John Jacob Astor," *ibid.*, 39 : 308; "In Cowboy Land," *Century Magazine*, 24 : 276; "The Homespun Age," *New England Magazine*, 25 : 239; "Early Disunionists, *Harper's Magazine*, 24 : 807; "Early Secessionists," *ibid.*, 24 : 515; "Locomotion, Past and Present," *ibid.*, 46 : 161.

FEBRUARY.

Boundary lines. The Indian frontier. Wars with the Indians. Foreign interference with American commerce. The war on the Great Lakes (1812).

The early history of Chicago and vicinity. Portage railroads. The Erie Canal. Closer relation between East and West.

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REFERENCES (teachers' reading list): McMaster, *History of the People of the United States;* Andreas, *History of Cook County;* Kirkland, *History of Chicago;* Perkins, *Annals of the West;* Ford, *History of Illinois;* Gardiner and Struve, *History of Illinois;* Mrs. Kinzie, *Wanbun.*

"Fergus Papers:" *Directory of Chicago*, 1839; John Wentworth, *Early Chicago;* Henry Brown, *Present and Future Prospects of Chicago;* H. Martineau, *Chicago in 1836;* H. Brown, *Early History of Illinois;* R. W. Patterson, *Early Society in Southern Illinois;* Charles Cleaver, *Reminiscences of Early Chicago;* Chas. Fenno, *A Winter in the West; Business Directory*, 1846.

Ball, *Northwestern Indiana, 1800–1900;* Mason, *Chapters from Illinois History;* Mather, *The Making of Illinois;* Bateman and Selby, *Historical Encyclopedia of Illinois;* Cleaver, *History of Chicago;* Blanchard, *History of Illinois;* Breese, *Early History of Illinois;* Bross, *History of Chicago;* "Scenes in the War of 1812; *Harper's Magazine*, 27 : 145, 289, 596, 739; "An Old Indian Letter," *ibid.*, 95 : 876; "The Last Indian Council on the Genesee," *ibid.*, 14 : 338; "Our Indian Brothers, *ibid.*, 56 : 768; "Indian Education at Hampton," *ibid.*, 62 : 659; "Beginnings of the American Navy," *ibid.*, 95 : 547; "War of 1812," *ibid.*, 68 : 548; "St. Clair's Defeat," *ibid.*, 92 : 387; "Wayne's Victory," *ibid.*, 92 : 702; "Scenes in the War of 1812, *ibid.*, 29 : 147, 596; "Defence of New Orleans," *ibid.*; 30 : 168; "History of the United States Navy," *ibid.*, 24 : 159; "Transportation," *ibid.*, 37 : 605; "Costume" (1815), *ibid.*, 25 : 745; "Hull's Campaign," *ibid.*, 26 : 721; "Galena and Its Lead Mines," *ibid.*, 32 : 681; "Old Chicago," *ibid.*, 61 : 711; "Studies of the Great West" (Chicago), *ibid.*, 76 : 869.

MARCH.

Slavery in the Northwest Territory. The Missouri Compromise. Internal Improvements. Tariff. Nullification. Abolition Party. Oregon, Texas, California.

REFERENCES (teacher's reading list): Hinsdale, *The Old Northwest;* Carr, *Missouri;* Rhodes, *History of the United States;* Davis, *Under Six Flags* (Texas); William Lloyd Garrison, *The Story of his Life told by his Children;* Tanner, *Lovejoy;* Greeley, *Lovejoy;* Schurz, *Henry Clay;* Inman, *The Santa Fé Trail;* "Early Oregon," *Harper's Magazine,* 33 : 26; "A Ride with Kit Carson in 1848," *ibid.,* 7 : 306; "Travel in New Mexico," *ibid.,* 8 : 577; "Over the Plains to Colorado," *ibid.,* 35 : 1; "A Stage Ride to Colorado," *ibid.,* 35 : 137; "Our New Northwest," *ibid.,* 35 : 170; "Rides Through Montana," *ibid.,* 35 : 568; "Davy Crockett," *ibid.,* 34 : 606; "Nullification," *ibid.,* 25 : 367; "How We Got Gold in California in '49," *ibid.,* 20 : 598; "The First Overland Trip to California," *ibid.,* 21 : 80; "Life in California before the Gold Discovery," *Century Magazine,* 19 : 163; "How California Came into the Union, *ibid.,* 18 : 775: "Pioneer Days in San Francisco," *ibid.,* 21 : 541; "Discovery of Gold in California," *ibid.,* 19 : 525; "The First Emigrant Train to California," *ibid.,* 19 : 106; "Pleasures and Perils of the California Trip in '49," *ibid.,* 20 : 911; "To California in '49," *ibid.,* 20 : 666; "Across the Plains in 1846," *ibid.,* 20 : 409.

APRIL AND MAY.

The Senate of 1850. Fugitive slave law. Kansas-Nebraska Conflict. John Brown. Lincoln. Secession.

REFERENCES (children's reading list): Browne, *Everyday Life of Lincoln;* Coffin, *Lincoln;* N. Brooks, *Lincoln;* E. S. Brooks, *Lincoln;* Thayer, *The Pioneer Boy;* Sanborn, *Life and Letters of John Brown;* Livermore, *My Story of the Civil War;* Stowe, *Uncle Tom's Cabin;* Fiske, *Civil War;* Coffin, *Boys of '61; Drumbeat of the Nation; Redeeming the Republic; Freedom Triumphant; Marching to Victory;* Catherwood, *Spanish Peggy;* Douglas, *My Slavery and Freedom:* W. Phillips, *Orations; Toussaint L'Ouverture;* Whittier, "Voices of Freedom;" Lowell, "Capture of Certain Fugitive Slaves."

Teacher's reading list: Benton, *Thirty Years' View;* Buxton, *The African Slave Trade and Its Remedy;* Douglas, *My Slavery and Freedom;* Schurz, "Essay on Lincoln;" Herndon and Weik, *Life of Lincoln;* Von Holst, *John Brown;* Nicolay and Hay, *Life of Lincoln;* Irelan, *Life and Times of Lincoln;* Lamon, *Life of Lincoln;* Morse, *Life of Lincoln;* Tarbell, *Life of Lincoln;* Tarbell and Davis, *Early Life of Lincoln;* Raymond, *Life of Lincoln;* Scripps, *Life of Lincoln;* Crittenden, *Speeches of Lincoln;* Stoddard, *Table Talk of Lincoln;* Douglas, *Narrative of the Life of Douglas;* Chesnutt, *Frederick Douglas;* Gregory, *Frederick Douglas;* Robinson, *The Kansas Conflict;* Hale, *Kansas and Nebraska in 1854;* Wilson, *Rise and Fall of the Slave Power in America;* Dangerfield, *John Brown at Harper's Ferry;* Thayer, *The Kansas Crusade;* Robinson, *Kansas; Its Interior and Exterior Life;* Hart, *American History Told by Contemporaries,* Vol. IV; Johnson, *American Orations: Speeches of Calhoun, Clay, and Webster;* Greeley, *History of the Slavery Struggle;* Chase and Sanborn, *North and South;* Moore, *History of Slavery in Massachusetts;* Harris, *Plantation Pageants;* Lighton, *Sons of Strength; Kansas Border Wars;* Hazelrigg, *History of Kansas for Schools;* "Georgia the Only Free Colony; How the Negro

Came," *New England Magazine*, 22 : 280; "England and America in 1863," *Harper's Magazine*, 92 : 846; "A Century's Struggle for Franchise in America," *ibid.*, 94 : 207; "Lincoln's Home Life in Washington," *ibid.*, 94 : 353; "Slave Trade in Africa,' *ibid.*, 86 : 613; "Memories of Wendell Phillips," *ibid.*, 89 : 133; "New York Slave Traders," *ibid.*, 90 : 293; "My Life as a Slave," *ibid.*, 69 : 730; "Story of Plantation Life," *ibid.*, 78 : 39; "Story of a Georgia Plantation," *ibid.*, 78 : 887; "Stonewall Jackson," *ibid.*, 83 : 907; "Mason and Dixon's Line," *ibid.*, 53 : 549; "Edwin M. Stanton, *ibid.*, 45 : 737; "Clay," *ibid.*, 45 : 445; "Webster," *ibid.*, 45 : 750; "Slavery Time (Told by a Slave)," *ibid.*, 46 : 509,

JUNE.

The City of Washington: Descriptions, pictures, maps; history of the placing of the capital.

Picture the life of the president. A session of congress; compare with an assembling of parliament. The supreme court. The diplomatic services. Our representatives at foreign courts. Naturalization and immigration laws. Customs and duties,

REFERENCES (teacher's reading list): Douglas, *A Little Girl in Old Washington;* Todd, *Story of the City of Washington;* Brooks, *Washington in the Time of Lincoln;* Wilson, *Washington, the Federal City;* "Washington, D. C., in 1859," *Harper's Magazine*, 20 : 1; "Washington, D. C., in 1874," *ibid.*, 28 : 433; "Washington, D. C.," *ibid.*, 6 : 1; "The Executive Department and Seals," *ibid.*, 38 : 319; "House of Lords and King's Bench," *ibid.*, 30 : 71; "The New Washington," *Century Magazine*, 5 : 644-803; "The Capitol," *ibid.*, 3 : 803.

TEXTILES.

CLARA ISABEL MITCHELL.

(Outline of the years' work in the textile arts, with suggestions as to related subjects. Continued.)

THIRD GRADE.

Spinning.—Wool and flax sufficient to give fair degree of skill.

Weaving.— Button bags; marble bags; decorative strips for curtain borders. Baskets of raffia, rattan, Indian splints.

Dyeing.— Cotton threads for embroidery; wool yarns for weaving; raffia for basketry.

Embroidery.— Squares of linen or canvas for table centers or pincushion covers; book-bags. Cross-stitch.

Sewing.— Hemming of dish towels; book-bags; sewing bags; needle-books; curtains; cooking aprons; basting, running, overseaming, back-stitch.

Nature study.— Observation of air, water, steam, and electricity as motor powers; simple experiments with each; original inventions of wind-mills and water-wheels; practical use of windlass, siphon, and pump.

Mathematics.— Use of percentage in connection with the weighing of yarns, dyes, and mordants.

Geography.— Excursions to mills. Pictures and stereopticon views of Indian, Egyptian, and American cotton fields; Egyptian and Rhenish and Irish flax regions; of grazing regions of Central Asia, China, Russia, Switzerland, Spain, South America, and United States. Reading lessons on Egypt and the Nile. The making of a river in the geographical laboratory or in the school yard; observation of the essential facts of all river action. Reading lessons on the early culture of flax and cotton in the Nile valley.

History.— Reading of the early history of Chicago and its fur trade; excursion to the wool markets of the city; Miletus as an ancient wool market; textile arts among the ancient Greeks. Stories of inventions in means of transportation.

Literature.— Stories from the *Iliad* and the *Odyssey*.

FOURTH GRADE.

Weaving.— Rag rugs; bath mats: baskets of rattan, raffia splints, and cord.

Dyeing.—Yarns, threads, and rags for mats.

Embroidery.— Doilies for the dining-room; bags; aprons. Crosstitch, satin stitch, and outline stitch.

Sewing.—Aprons; bags; over-sleeves; easier parts of costumes needed in plays. Felling, gathering, darning, sewing on of buttons. Plain seams on machine.

Nature study.— Practical use of lever in the hand-loom and sewing-machine. Use of steam motor in running sewing-machine. Observation of chemical and physical changes taking place in dyeing. Use of litmus in testing acid and alkali mordants. Salts; experiments in crystallization.

Geography and history.— Local topography and its relation to methods of transportation, trade, exports and imports, manufactories, public buildings, and history. Reading descriptions of the people and regions which send their products to our city. People and countries of other times which have been noted for their contribution to knowledge of the industries represented in our city.

Literature.— Biographies of inventors, discoverers, and explorers, *e. g.*, Cartwright, Arkwright, Hargreaves, Crompton, Jacquard, Whitney, Watt, Stephenson, Newton, Edison, Marco Polo, Columbus.

HOME ECONOMICS.

ALICE P. NORTON.

THE following plan for teaching was prepared by a member of the pedagogic class as the summing up of the work of the winter quarter:

MILK AND ITS PRODUCTS.

I. Universal use of milk in cooking and as food. Stories of Swedish and Norwegian peasants and inhabitants of Switzerland.

II. Simple experiments. (1) Separating cream from milk; (2) separating the curd from the whey; (3) making butter and cheese.

III. Milk products. (1) Butter, (2) cheese, (3) buttermilk; leading to IV.

IV. Industrial studies. (1) Milkman and his work. (2) Dairy, or work of farm connected with the milk: (*a*) process of milking; (*b*) straining; (*c*) care of pails, cans, etc.; (*d*) skimming; (*e*) care of cream and milk; (*f*) difference in quality of milk; (*g*) care of cows. (3) Creamery, or butter-making on farm: (*a*) storing of cream; (*b*) stirring; (*c*) process of churning; (*d*) temperature of cream and air; (*e*) "working" the butter; (*f*) care of butter; (*g*) qualities of butter. (4) Study of primitive methods of making butter, compared with modern; old-fashioned churns, etc. (5) Cheese factories, and making of different kinds of cheese.

V. Commercial value of milk, butter, and cheese. Comparison of cost of butter with cost of cream for making.

VI. Cookery. Boiling milk; use in cocoa, soups, desserts, etc.

VII. Food value and digestibility (with higher grades).

Arithmetic is absolutely necessary in this work. The many problems arising involve: (1) Pints, quarts, and gallons, and the changing of pints to quarts, etc. (2) Computation of cost of milk used in school or home for different purposes; cost of cream, butter, and cheese. (3) Weights, avoirdupois and metric.

Reports of visits to farm, dairy, and creamery will be made by writing, drawing, making, modeling, or dramatizing.

Literature to be used by the children.—Chase and Clow, *Stories of Industry*, Vol. II, p. 100; Thaxter, *Milking;* Dobson, *The Milkmaid;* Wells, *The Cowboy's Song;* "The Cow and the Ass," *Stepping-stones to Literature* (for fourth grade), p. 52.

REFERENCES: "Dairy Schools and Dairy Products," *Popular Science Monthly;* United States Department of Agriculture, *Farmer's Bulletins* Nos. 29, 42, 63, 74; Mrs. Percy Frankland, "Boiling Milk," *Nineteenth Century*, September, 1896; Mrs. Lincoln, "Cheese," *American Kitchen Magazine*, January, February, March, 1902; "A Lesson from Switzerland," *American Kitchen Magazine*, Vol. II, p. 190; *ibid.*, Vol. II, p. 122; Vol. VII, p. 183; Reports of Department of Agriculture, Bureau of Animal Industry, *Bulletins* Nos. 5, 11, 14; Wing, *Milk and Its Products.*

GENERAL OUTLINE FOR APRIL, MAY, AND JUNE.

Subject: The House.

I. Function of the home in society. Relation of the house to the home.

II. Historical. The evolution of the house. Homes of primitive peoples. Greek and Roman houses. The mediæval house. Old colonial houses.

III. The modern house; (1) the location. Study of soils and building sites. The situation and surroundings from the sanitary and æsthetic standpoints. (2) Domestic architecture. Study of styles of architecture as seen in the dwellings of Chicago. Drawing of house plans. Visits to houses in process of construction. (3) Sanitation: (*a*) disposal of household waste; modern plumbing and its care; the drainage system of Chicago; (*b*) heating and lighting; relative merits and costs of different systems; applications of physics in steam and hot water heating; electric light and gas meter; (*c*) ventilation, its physics and physiology; systems to be used in new building; practical systems for the house; (*d*) water supply; study of the Chicago supply; purification of water; filtration, public and private; the water meter. (4) Household art: The finishing, furnishing, and decoration of the house; woods, their finishing and care; principles of decoration.

PHYSICAL TRAINING.

CARL J. KROH.

REVIEW FOR THE WINTER QUARTER.

THE present gymnasium of the School of Education, although only a temporary arrangement, represents a handsome model-school affair. It is adapted to the needs of the classes from the kindergarten, the grades, and the pedagogic school. It is suitable for individual and corrective, as well as for class work. The completion of the equipment, early in January, greatly facilitated the work in physical training during the past quarter, having made possible an extension of opportunities for optional practice.

Hours for special practice were assigned the classes composed of the various grades. Those pupils who could not participate in this special practice availed themselves of the periods assigned for team plays. The pedagogic classes organized a special course in dancing calisthenics, supplementary to the regular work. The programs of the regular schedule hours of each class in systematic, free, and apparatus gymnastics, games, and plays, reinforced by the optional practice, were illustrated in the monthly summaries during the regular morning exercises before the whole school. Some thirty pupils received special attention in corrective gymnastics during eleven hours of the day.

Outdoor exercises, suggested, consisted of outings, quick marches, and moderately fast runs to the lake front, and back, the several groups of boys usually reporting their experiences to their classmates.

On one of these occasions the boys consented, upon suggestion, to secure some data with reference to individual physical conditions before and after exercise. The data thus secured was referred to the respective grade teachers.

Incidentally, the boys also declared themselves with reference to the games and plays they had preferred outdoors. The majority had played in the parks the games of "ice-hockey;" others had played "ice-tag." Quite a number of boys played "hare and hound," under the name of "skip," in the districts adjoining the school, using chalk-marks to indicate their courses. Two boys furnished quite a collection of winter games, clipped from the large city dailies. Another boy furnished a description of a game played by him in a school abroad.

A diagram of the plan of the buildings proposed for the Olympian games in 1904 suggested the character of the morning exercises in physical training for March. These exercises consisted of spear- and discus-throwing, also of various modes of "starts" for running and springing exercises, as class exercises. A number of drawings by pupils and students, representing the various action-forms, adorned the walls of the gymnasium on this occasion.

At present the boys of the grammar grades are designing and drawing plans for outdoor apparatus they would like to have for use during the spring and summer months. These plans include a scaling wall eight by ten feet, which is to be used also in playing hand-ball; jumping steps with jumping platforms, respectively, four, six, eight, and ten feet high; and two high posts with a cross-beam, eighteen feet high, for swinging ropes, to be placed about twelve to fifteen feet from the bottom of the jumping steps for "swing-jumping." Sand hills are to be formed around the scaling wall, on one side of the step-way, and at a distance from the swinging-rope. Pole vaulting apparatus and plans for high and broad jumping are also included. A stretch for quoit throwing and a space about one hundred feet square for games will be reserved.

The practical work of the pedagogic classes followed the outlines in the COURSE OF STUDY, Vol. I, No. 1.

The plan suggested at the beginning of the quarter, of referring topics relating to physical training to student committees for special study and report, was productive, in a number of instances, of good results. A few of the topics discussed and formulated for study and report were as follows:

In what way do gymnastics cultivate and assist the powers of alertness and attention? What is the evidence of a direct relation between gymnastic training and expression?

Memoranda (observation): Mental activity, judged through physical expression: in gymnastics? on the playground? In the class-room — reading writing, drawing, singing, sloyd? Characteristic postures and actions, apparent defects, temperament, etc.

Compare pupils who have had physical training throughout the fall and winter quarters with pupils who entered during the autumn quarter; also with pupils in home schools who have not had physical training. Note power of control in posture and action, co-ordinative power in gymnastics and in general. Give effects upon self of acquired physical control, as emphasized in carriage bearing, and ease of movements. Discuss purposive gymnastic training; the processes involved in such training? Order, design, effects of exercises; methods of development and direction of free gymnastics—presentation, commands, criticism of postures and actions.

The conscious effort in gymnastics—how best stimulated? Compare training with spontaneous and involuntary play action.

In your study of games and plays how would you differentiate and direct the spontaneous play desires under varying conditions? Is the organization and supervision of play periods advisable? Character of the short recess and the regular play period.

THE KINDERGARTEN.

ANNE ELIZABETH ALLEN.

OUTLINE FOR APRIL, MAY, AND JUNE.

AN occasional suggestion is all that is needed to keep the senses of the children alert to every sign of the approach of spring. The months spent indoors, under more or less artificial conditions, make the children eager for the new things outside.

We shall closely watch the changes in particular trees, shrubs, plants, and grass plots in our daily walks. Nature herself will dictate the order of our observations as she provides the procession of spring signs. Such seeds as the children may bring we shall plant in pots in the room until the weather permits planting in our school garden. Here we shall have vegetables of quick growth, and flowers to ornament the lawn.

In all excursions, and in the garden work, as much liberty will be given the children as possible. Before they leave the schoolroom their attention will be directed to some object for special observation, and they will be left to their own devices in looking for and reporting on this particular thing. If practicable, each child will be given a garden-plot of his own, where he may dig and plant at will. Experience has taught that a set bed and an exact way of planting destroys all the real pleasure a

little child feels in being instrumental in making things grow. If he must constantly "be careful" all his joy is swallowed up in the necessarily frequent reminders of the teachers, who must ask of him the same consideration and thought that is expected of a grown person.

Subject: How things speak to us:

1. Through the eye — in color and motion: sun, flowers, fruit, vegetables, stones, etc. We may tell what bird is flying, when too high to discern the color, by the movements it makes; which way the wind is blowing by watching the smoke, bending of trees, or weather-vane.

2. Through the ear — in sound: voices of people, songs of birds, sounds made by animals; wind, rain, thunder, train whistles, clocks, bells; music — piano directing rhythms, triangle for signals.

3. Through the nose — odor: flowers, fruits, vegetables, smoke, perfumes, fresh air.

4. Touch — all objects that may be handled.

5. Taste — all objects that have flavor.

6. Things that speak to us of spring — south wind, sun, green coming into the grass, trees, and shrubs; return of birds.

Materials used. — Paints, paper, clay, sand, fruits, flowers, vegetables, seeds, pictures of birds and animals, and those showing seasons.

Games. — "Jacob and Rachel," "One of Us Has Disappeared," "Pebble Game." Sense games, of sight, hearing, touch, taste, smell. Growing plants, spring showers, clouds and sunshine.

Songs. — Suitable spring songs: Mrs. Gaynor, *Songs for Little Children;* Eleanor Smith, *Songs for Little Children.*

Stories. — "Peggy's Garden and What Grew Therein," by Celia Thaxter; "Three Neighbors," A. E. A.; "What was Her Name," Laura E. Richards; "Baby Seed Song," Anonymous.

FIRST GRADE.

ELSIE AMY WYGANT.

REVIEW FOR JANUARY AND FEBRUARY.

Geography. — The work on tropical fruits we carried out much as planned in the January number. "How is it that we have oranges, bananas, cocoanuts, etc., when all our trees are bare?" was our problem. The conservatory in Washington Park we made our field of study.

The children recalled the appearance of their home locality during the fruit season. They described the climatic conditions of the tropics and inferred the results. These inferences we verified and modified by pictures,

and by the experience of individual children who had visited the South. To build up an image of a tropical country, we studied closely each of the tropical trees in the conservatory—the cocoanut tree, for instance, and its uses.

The class saw a variety of articles manufactured from the fiber of this tree. Each child had a cocoanut to experiment with. He drained the milk and used it for luncheon. (For number work involved see ELEMENTARY SCHOOL TEACHER, Vol. II, No. 6, p. 531.) The next day he sawed off the top, used a part of the meat to make macaroons, and boiled the rest, skimming off the oil. In the shell he planted the quick-growing "Wandering Jew." This made a hanging flower-pot, and served as a pretty valentine.

On our modeling table a tropical region was molded in sand. The dangers of any model were, of course, magnified in this, where so much was beyond the actual experience of the children. For this reason very frequent opportunities were made for translating it into terms of experience. Our palm, banana, bamboo trees, etc., were compared with those at the conservatory, the size referred to actual size and true proportions maintained throughout the construction so far as possible.

Dramatic art.—"Mowgli's Admission Into the Wolf Pack" and the story of "Tomai and the Elephants," taken from the *Jungle Book*, were told in connection with the geography. "Tomai and the Elephants" the children modeled in clay, each making one part. Then all the parts were arranged on a large board; the whole served as a pleasant plaything. In this play the children were absolutely undirected, and it was observed that they handled the elephants and talked over the story, but in no sense attempted any dramatization with the models as puppets.

A trip to the Lincoln Park zoo was made in preparation for the dramatization of the Mowgli story. Upon their return, the children voluntarily imitated separate animals, but had no desire and apparently lacked the power to dramatize the story itself. When they attempted it, at the suggestion of the teacher, the play was forced and had to be wholly directed by her. So far as the dramatization went it was a failure. The attempt showed that these children had not sufficient experience with the animals to make their impersonation possible. It emphasized strongly the fact that experiences must be familiar before they are put into dramatic form by little children. Consequently, the play was abandoned, and the fourth grade, which is working along the same line, will dramatize it for the first grade.

Science.—The science work—source of food, meat, and grains—was greatly hindered by the prolonged cold, which made excursions impossible. The trips to the packing-house, cold-storage warehouse, and flour mill are, therefore, to be taken in March.

The children corned beef to cook and serve cold for lunch. The following reading lesson, written by a member of the professional training class, Miss Ava Daratt, gives the recipe for the work:

CORNING BEEF.

We had 3 pounds of beef.

We made a brine for the beef.

We used 8 pints of water, 1 bag of salt, 1 tablespoonful of sugar, a small pinch of saltpetre.

At first the meat was red.

We rubbed salt into the meat.

Then we put the meat into the brine.

We let it stand for a week.

We took the meat out of the brine.

It was gray.

We made a new brine.

We put the meat into this brine for three days more.

Now the beef was corned.

It was ready to boil.

History.— The play-house: The designing of the wall-paper is begun, and the review of the work will be given in the next issue of this journal.

Manual training.— The children have made two partitions, 7 × 10 inches, for the playhouse, to divide each floor into two rooms; fitted and fastened same into house; cut a door 2½ × 3 inches in each partition; made windows in the rooms. This necessitated the finding of the center of a rectangle. The children discovered the way to find it by means of its diameters. This was accepted and used; then the easier way of using the diagonals was suggested.

We have begun with the dining-room in the furnishing of this house. The class planned the size of the furniture in proportion to the size of the room, and made a working drawing of each piece. They will use poplar wood for the dining-room furniture. When they construct the parlor furniture a study of woods will be made, and each child will select his own. Before that work is done two excursions will be taken, to the salesrooms of The Tobey Furniture Co. to see the completed articles, and to a factory to see the construction.

Home economics.— Baked potatoes, cocoanut macaroons, boiled apples, and cornstarch pudding are the four new dishes which have been cooked for luncheons.

and by the experience of individual children who had visited the South. To build up an image of a tropical country, we studied closely each of the tropical trees in the conservatory—the cocoanut tree, for instance, and its uses.

The class saw a variety of articles manufactured from the fiber of this tree. Each child had a cocoanut to experiment with. He drained the milk and used it for luncheon. (For number work involved see ELEMENTARY SCHOOL TEACHER, Vol. II, No. 6, p. 531.) The next day he sawed off the top, used a part of the meat to make macaroons, and boiled the rest, skimming off the oil. In the shell he planted the quick-growing "Wandering Jew." This made a hanging flower-pot, and served as a pretty valentine.

On our modeling table a tropical region was molded in sand. The dangers of any model were, of course, magnified in this, where so much was beyond the actual experience of the children. For this reason very frequent opportunities were made for translating it into terms of experience. Our palm, banana, bamboo trees, etc., were compared with those at the conservatory, the size referred to actual size and true proportions maintained throughout the construction so far as possible.

Dramatic art.—"Mowgli's Admission Into the Wolf Pack" and the story of "Tomai and the Elephants," taken from the *Jungle Book*, were told in connection with the geography. "Tomai and the Elephants" the children modeled in clay, each making one part. Then all the parts were arranged on a large board; the whole served as a pleasant plaything. In this play the children were absolutely undirected, and it was observed that they handled the elephants and talked over the story, but in no sense attempted any dramatization with the models as puppets.

A trip to the Lincoln Park zoo was made in preparation for the dramatization of the Mowgli story. Upon their return, the children voluntarily imitated separate animals, but had no desire and apparently lacked the power to dramatize the story itself. When they attempted it, at the suggestion of the teacher, the play was forced and had to be wholly directed by her. So far as the dramatization went it was a failure. The attempt showed that these children had not sufficient experience with the animals to make their impersonation possible. It emphasized strongly the fact that experiences must be familiar before they are put into dramatic form by little children. Consequently, the play was abandoned, and the fourth grade, which is working along the same line, will dramatize it for the first grade.

Science.—The science work—source of food, meat, and grains—was greatly hindered by the prolonged cold, which made excursions impossible. The trips to the packing-house, cold-storage warehouse, and flour mill are, therefore, to be taken in March.

The children corned beef to cook and serve cold for lunch. The following reading lesson, written by a member of the professional training class, Miss Ava Daratt, gives the recipe for the work:

CORNING BEEF.

We had 3 pounds of beef.

We made a brine for the beef.

We used 8 pints of water, 1 bag of salt, 1 tablespoonful of sugar, a small pinch of saltpetre.

At first the meat was red.

We rubbed salt into the meat.

Then we put the meat into the brine.

We let it stand for a week.

We took the meat out of the brine.

It was gray.

We made a new brine.

We put the meat into this brine for three days more.

Now the beef was corned.

It was ready to boil.

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Home economics.— Baked potatoes, cocoanut macaroons, boiled apples, and cornstarch pudding are the four new dishes which have been cooked for luncheons.

The cooking period of the first grade comes from 11 to 12 o'clock on Friday. The lunch period for the entire school occurs at 12. The first grade has invited some other grade to luncheon each Friday, and the cooking has been in preparation for this party. The social value of this period in the school may be illustrated by the following incidents:

The children invited the first grade of the Francis W. Parker School to luncheon on Valentine's Day. Because of a party given by the whole school the cooking lesson of the first grade was omitted and they were unable to prepare anything particularly nice for their guests. The second grade, whose cooking comes on Thursday, heard of the difficulty, and, without telling us, made pop-corn balls and put them on our lunch table when it was set. The delicacy which kept this neighborliness a secret, lest it suggest the inclusion of the givers in the invitation, seems to me the essence of the spirit of true courtesy.

Another Friday the first grade invited the fifth to luncheon. The children boiled apples in syrup, and served with whipped cream. While they were preparing the apples with the whipped cream some of the fourth grade, who were in the room and saw the preparations, offered two glasses of the jelly they had made in the fall.

The following reading lessons were recipes given to the children:

APPLES BOILED IN SYRUP.

Pare 2 apples.
Core the apples.
¼ cup of sugar.
½ cup of water.
Heat the sugar and water together until it boils.
Boil the apples in the syrup until they are soft.
Take out the apples.
Boil the syrup until it is stringy.
Pour the syrup over the apples.

COCOANUT MACAROONS.

The original recipe, written in terms of pound measure, was rewritten in terms of gill measure for convenience and reduced in quantity for work of individual children. Using the following quantities of materials, each child made about six macaroons of usual size.

Use 1 gill of cocoanut.
¾ gill of sugar.
½ the white of an egg.

Directions.—Cook the cocoanut and sugar in the double boiler until the mixture clings to the spoon.

Add the white of the egg and stir vigorously.

Cook the mixture until it feels sticky.

Spread in a wet pan and cover with a wet paper, then chill on the ice.

Shape in desired form, after dipping hands in cold water.

Bake twenty minutes in slow oven, on tin greased with white wax.

After the macaroons are shaped wait until the following day before cooking them.

CORNSTARCH PUDDING.

½ pint of milk.

2 tablespoonfuls of sugar.

2 tablespoonfuls of cornstarch.

A pinch of salt.

Directions.—Boil about fifteen minutes, until the cornstarch is cooked. Flavor with ½ teaspoonful of vanilla. Pour into cold wet molds.

NOTE.—This recipe, which was given to each child, made two individual molds, or about ½ pint.

SECOND GRADE.

CLARA ISABEL MITCHELL.

REVIEW: HISTORY AND GEOGRAPHY.

AT the beginning of the school year "Shepherd Life" was chosen as the subject for lessons in geography and history. It was thought that some knowledge of the sheep-tending and wool-weaving experiences of the race in that early stage would stimulate the children's interest in their own weaving and in all

weaving; also direct them toward an interpretation of the clothing of the human race as the resultant of human labor and natural resource, acting and reacting one upon another.

The early Jews were taken as the shepherd type of ancient times; the modern Arabs as types of present-day shepherd life.

The basis for these lessons lay in the schools' need of holders for handling hot dishes during cooking lessons. After the making of holders had been proposed to the children and decided upon, they chose wool as the least combustible of the textile fibers. Experiments were made with wool in all stages — in the fleece, sheared, scoured, unscoured, spun, and unspun. From the fleece the children learned by touch the parts which give the finest fiber. By washing with soaps and water at differing temperatures they learned the essential facts of scouring and also felting wool. In the attempt to make yarn by twisting with the thumb and fingers, they discovered that long and curly fibers are most readily spun; that the spinning process is one of laying fibers straight and parallel, then twisting. The difficulty of this twisting led to discussion of easier means; wheels, and afterward tops, were suggested. Spindles, distaffs, and wheels were shown; and while the children decided to make spindles and learn to spin, they decided not to postpone the making of holders until they should have learned.

Germantown yarn was choosen as the material. Its color was discussed and decided upon, and the yarn dyed according to the plan outlined by Mrs. Green and published in the ELEMENTARY SCHOOL TEACHER, Vol. II, No. 6, p. 448. By the time the yarns were dyed and the designs made, the children had completed the necessary wooden looms, which had been under way in the shop for two months.

As they became interested in weaving they were taken to Marshall Field's to see oriental rugs as the most beautiful examples of woven fabrics. They were then shown pictures of the country and people of Arabia and Persia, Desert and climate conditions being pictured for them, they were easily able to image conditions of nomad life. As an aid to their imaging, the children read, with much help from the teacher, the story of "Gemila, the Child of the Desert," in Miss Andrews'. *Seven Little Sisters.*

With this imagery as a background, with photographs and blackboard drawings of the Holy Land, the story of Abraham was told, not in a continuous narrative, but as an account made by teacher and children of the necessary happenings arising from natural conditions.

In this way the stories of Isaac, Jacob, Joseph, and David were told, and afterward read and reread from Moulton's translation of the Bible, children's edition.

At about the time of the close of the lessons, it happened that the class was to take its turn in entertaining the school at the daily morning exercise. At the suggestion of the teacher, "Shepherd Life" was chosen as the subject

for the exercise. In planning to make it interesting the children wrote suggestions like the following:

"I think it would be nice to make a little desert to show the children. We must have sand and rock, a tent and camels, and flocks and a well."

"We ought to have a mother and a little girl weaving a rug in front of the tent."

"We ought to tell how the shepherds drive their flocks to the grassy places in the desert. They travel at night because the days are hot. People in Arabia do not eat the same things we do. They eat dates and bread and cheese. They drink goats' milk. They grind their grain in a stone bowl. They do not have many dishes."

The "little desert" was modeled by the children in a pan two by three feet. The people, horses, sheep, and camels were modeled of clay. Palm trees were made of twigs and paper, cut and painted green. The well was a little dish hidden by rocks and grass. The tent, loom, rugs, and costumes were copied from pictures.

In the morning exercise this model of the desert was explained by one of the children. He told also about the enforced wanderings of the shepherds, their travels by night, their food, clothing, and customs. A Turkish rug was shown, and its design and weave explained. Then followed the stories of Abraham, Isaac, Jacob, and Joseph. The children who told these stories had practiced the telling of them, and in most cases had carefully written them as they wanted to tell them. One is given as an illustration:

"Abraham heard the voice of the Lord telling him to take his wife Sara, his nephew Lot, and all his herds, and journey to the land of Canaan. And the Lord promised Abraham that that land should belong to him and his sons forever. Abraham felt very badly because he had no sons. But the Lord promised him that his sons should be as many as the stars of heaven and as the sands of the sea.

"So Abraham took his wife Sara, his nephew Lot, and all his flocks, and traveled to the land of Canaan. He traveled by night and followed the stars.

"One day, as Abraham sat in his tent door, he saw three strangers appear. He went to meet them and invited them to enter his tent. He told his wife Sara to take quickly three measures of meal and cook cakes for the strangers Then he ran to the flocks and chose the finest calf and told a young man to dress it for the strangers.

"The strangers asked: 'Where is thy wife Sara?' And they said that the next time they passed that way Abraham would have a son. Sara was in her tent, and when she heard that she laughed. So when the son was born they called his name Isaac, for Isaac means 'laughter.'"

THIRD GRADE.

GUDRUN THORNE-THOMSEN.

REVIEW: THE TEACHING OF ENGLISH.

THE average age of the children in our third grade is nine years. Their oral language expresses well their thoughts; with few exceptions they speak correctly, using a varied and fairly large vocabulary. Undoubtedly, the home training accounts for this power; the correct language heard at home, the continual corrections by the parents, and the reading of good literature, are reflected in the children's speech.

The problem of teaching a child the use of good English is, after all, not so burdensome a task. The absolute need for oral expression, the constant use of it under the impulse of intrinsic thought, and the fact that the child is surrounded by it continually, so to speak, cause a child of three years to conquer most of the difficulties. If it were possible to give written language the same impulse of necessity and constant use for the expression of thought, might not results be looked for different from those we actually get after eight years of school training?

The children who entered the third grade last October had very little power to express themselves by writing. Most of them had gained some technique in the forming of letters and spelling of words, but to none of them was writing a means of expressing thought. Helplessly they asked: "What shall I write?"

It has been the aim of the teacher to give the children, during school hours, as many opportunities as possible to feel the need of writing, and to cause them to use it constantly for reasons they themselves would think valid.

Written expression has been used in the following instances:

1. Note taking: (*a*) while experimenting, (*b*) while on excursions, (*c*) while studying books.

2. Notes written up to present to class.

3. Dictation: (*a*) recipes for cooking, (*b*) directions for experiment.

4. Child's own desire to write on a certain subject.
5. Invitations; letters.
6. To help in discussions; to prove opinions.
7. To give directions for work to other children.

1. Note taking: Usually each child performs an experiment different from that of every other child in the class; and each one desires to compare his results with those of the other children. Examples:

(*a*) January 15: Apple weighed 125 grams. I cut it into small pieces. I left it to dry.

January 22: Apple weighed 26 grams; 99 grams gone.

(*b*) Visit to flour mill: Freight car full of wheat. Unloaded 1,000 bushels in fifteen minutes. Wheat carried up in small cars on a belt. Cleaned in six different machines. Crushed and sifted. Funny elevator. Machine to catch dust. Men loaded freight car with sacks of flour. 500 barrels in one car. 100,000 lbs. flour = 2,250 bushels of wheat.

(*c*) Lincoln: Born in Kentucky. Grandfather killed by Indians. Little, old log cabin. People could not read much then.

2. Notes written up to present to class.

Rice: First I took one-fourth cup of rice and put it into a pan with one-half pint of water, and boiled it. Before it was cooked it weighed 54 grams, and after it was cooked it weighed 167 grams. Before the little kernels of rice were cooked they were very hard, and after they were cooked they were very soft. The water that the rice was cooked in acted just like the starch which we use in the laundry. We starched some pieces of linen in the rice water and some in starch, and they were just alike. Both were stiff. We took some iodine and put it into the rice water, and it turned blue. That is the sign that it has starch in it.

4. The children have decided to bind all their written work and paintings into a book at the end of the year to give to their parents. Sometimes they suggest topics to write about, simply to tell of experiences which interest them. "First Signs of Spring" was suggested after a morning exercise on that subject:

I saw some pussy willows last Sunday. The temperature was 63° last Tuesday. That day the grass wasn't green. Then the night came and it rained, and it rained the next day, too. And the next day the grass was green on our lawn, and the crocuses were up.

5. After reading stories of Greek heroes, the children enjoy

discussing their comparative merits, and sometimes set forth in writing why they like a certain hero :

I like Theseus best, and I will tell you the reason. Theseus was brave; he dared to fight the Minotaur. Theseus was strong; for he rolled away the large stone. Theseus was unselfish; for he was willing to be devoured by the Minotaur to save his friends. And he was loving to his father and mother.

7. To give directions of work to other children.

If you have no starch and you want some, you can get fine starch this way: Take some potatoes and grate them. Put the grated potatoes into a bag of cheese cloth. Then you must put the bag into water and wash it and wash it till you can't get anything more out of it. Let the water stand for a day. Then pour it off carefully, and at the bottom of the dish you will find fine white starch.

In writing, the pupil needs many words which he cannot spell. The teacher either writes them on the blackboard, or the child looks them up in his " dictionary," a notebook in which each child writes the words he has misspelled or asked for in previous lessons. This dictionary, consisting of words which the child actually needs and uses constantly, has become a spelling-book, if so it may be called ; the children often take it home to learn the words.

After the written papers have been looked over and corrected by the teacher, it becomes necessary to give the class certain rules of syntax and grammar.

When a paper is read aloud and the class does not gain the thought which the writer desires to convey, a reconstruction of the language may be necessary. In this all members of the class assist. The use of punctuation marks is discovered, rules for the use of capitals, etc., are established.

Sometimes, while reading, the children notice different ways by which the same thought is expressed ; sometimes they observe beautiful expressions ; but, although the analysis of the literature which they read with regard to the language is not fully a conscious process, the constant reading of beautiful language undoubtedly helps to form their ideals and thus influences their own writing.

FOURTH GRADE.

GERTRUDE VAN HOESEN.

OUTLINE FOR APRIL, MAY, AND JUNE.

THE central thought of the work during the spring quarter will be the preparation and care of a garden, with all the problems that will grow out of it. These problems may be classified under three heads:

I. Preparation of garden: 1. Consideration of ideal conditions for (*a*) light (*b*) heat, (*c*) moisture, (*d*) soil.

In addition to the problems suggested by Mrs. Atwood in connection with these conditions in her outline for the fifth grade, in this number, the following investigations concerning moisture will be carried on: (*a*) Show that the plant actually takes up moisture (see *Nature Study for Grammar Grades*, by W. S. Jackman, p. 380). (*b*) Find the amount of water already in the soil at the disposal of seed to be planted. (*c*) Keep strict account of the rainfall from April 1, and get the data for March. (*d*) Find the rate of evaporation from garden. (*e*) Find rate of transpiration from small plants, using as a basis the data obtained from experiment under 1.

2. Under the actual preparations for the garden must be considered (1) preparation of land: (*a*) The saving of moisture; (*b*) preparation of the under soil; necessary tools; (*c*) preparation of surface soil; necessary tools.

II. Selection, sowing, and planting of seed. After consulting seed catalogues and books on gardening, the following must be determined: (1) The seeds which must be germinated indoors and then transplanted. (2) The seeds which are sown directly in the garden. (3) The distance between individual seeds or plants and the depth at which they must be planted. (4) Care of transplanted seedlings. (5) The marking of the plants and seeds. (6) The cost of the garden seeds.

III. The care of the garden after planting: (1) Weeding; note the comparative rate of growth of weeds and seeds planted; account for it. (2) Watering. (3) Tillage. (4) Insects and diseases. (5) Tools necessary to care properly for the garden. How many can the children make?

In addition to the study of germination, as outlined by Mrs. Atwood, other modes of propagation will be considered: (1) Bulbs and corms. (2) tubers, offsets, and rootstocks. (3) Layering. (4) Cuttings: (*a*) tuber cuttings; (*b*) root and rootstock cuttings; (*c*) stem cuttings; (*d*) leaf cuttings. (5) Grafting: (*a*) bud grafting; (*b*) scion grafting.

In every case experiments will be performed illustrating the mode of propagation.

The geography for the quarter is merely a larger view of the garden under consideration. It is outlined by Miss Baber in the ELEMENTARY SCHOOL TEACHER, Vol. II, No. 5, p. 351; topic, "Farming."

REFERENCES: *Great World's Farm; Selina Farm;* L. H. Bailey, *Garden Making, The Nursery Book. The Principles of Agriculture;* Jackman, *Nature Study for Grammar Grades;* King, *Soil;* Storer, Agriculture.

The history for the spring quarter is outlined by Miss Rice in the November issue of the present volume, p. 199 — "The Functions of the Government (or the Care that We Take of the People in our City)."

The details of the work here outlined for the spring quarter, together with the modes of expression employed in carrying out the work, will be given in the reviews to be subsequently published.

FIFTH GRADE.

REVIEW: FRENCH.

LORLEY ADA ASHLÉMAN.

LA SALLE.[1]

(Atelier de Mlle. Prétun au huitième étage, Fine Arts Building, Chicago. Déjeûner d'artistes.)

Mlle. Ella Prétun. Voyons, voici les viandes froides — le jambon, les saucisses, le bœuf, le veau. Hélène, où est le pain? et je ne vois pas le beurre.

Mlle. Hélène Prétun. Voici le pain et le beurre.

Mlle. Ella. Je vous remercie.

Mlle. Hélène. Il n'y a pas de quoi.

Mlle. Ella. Voilà les petits-pains, les radis, les olives, les gâteaux, les fruits et les bonbons. (Se tournant vers ses amis.) Mes amis, asseyons nous à table!

(Tous les artistes se mettent à table.)

M. Vincent. Voyons, mademoiselle Hélène, qu'avez-vous à nous proposer?

Mlle. Hélène. J'ai une idée, une bonne idée.

Mlle. Bertrand. Parlez nous en.

M. Tarnusky. Il faut que notre voyage se fasse en Amérique.

M. Girard. Il ne faut pas que ce soit trop cher!

Mlle. Bertrand. Que proposez-vous, ma chère amie?

Mlle. Hélène. Voilà l'affaire. Monsieur Lémon, pouvez-vous me dire quelque chose au sujet de La Salle? Vous êtes notre encyclopédie. La Salle, où est-il né, où est-il allé lorsqu'il était jeune homme?

[1] Played for morning exercise by children of the fifth grade.

M. Lémon. Mais, mademoiselle, quel rapport y a-t-il entre La Salle et l'excursion que nous comptons faire? Je crois qu'il est né à Rouen et qu'il est allé au Canada près de Mont Royal.

Tous les artistes. Quel homme!

Mlle. Hélène. Oui, vous avez raison. Monsieur Tarnusky, en quelle année a-t-il atteint Chicago?

M. Tarnusky. Je ne sais pas. Le savez-vous?

Mlle. Hélène. Mais, certainement. Je viens de lire sa vie. Il atteint Chicago en 1681.

Mlle. Bertrand (nonchalamment). Eh bien! alors: vous êtes bien agaçante aujourd'hui.

Mlle. Hélène. Eh bien! Je vais vous tracer son voyage au sud sur cette carte. La Salle s'embarqua sur la rivière Illinois, par laquelle il arriva au plus grand village des Illinois.

Mlle. Bertrand (baillant). Ah, vraiment!

Mlle. Hélène. Je compte présenter au Salon un tableau de La Salle, le représentant au milieu du camp des Illinois.

(Tous les artistes s'intéressent vivement. Plusieurs se lèvent.)

M. Lémon. Mademoiselle, je vous en prie, comment passa-t-il au milieu de leur camp?

Mlle. Hélène. Il fit prendre les armes à sa petite troupe. Il rangea ses canots de front. Les Indiens, effrayés de cette audace, quoiqu'au nombre de plusieurs milliers, devant une vingtaine de Français, implorèrent la paix et lui présentèrent trois calumets.

Mlle. Hélène. Hum, assez beau sujet!

M. Tarnusky (montrant une pipe curieuse, suspendue au mur). Voilà un calumet, n'est-ce pas? Que signifie le calumet parmi les Indiens?

Mlle. Bertrand. Les Indiens disent que c'est un présent du soleil pour établir et pour confirmer la paix parmi eux. Le calumet rouge est une marque qu'ils offrent au secours; les plumages blancs et gris signifient la paix et du secours.

M. Tarnusky. Je vous remercie mille fois de votre explication, mademoiselle.

M. Lasnier (avec intérêt). En savez-vous plus long, mademoiselle Hélène? Vous nous faites un cours d'histoire fort intéressant. Les Indiens, lorsqu'ils se trouvent associés à un Français, ne sont pas si mal.

Mlle. Hélène. Ah! M. Lasnier, je suis "femme savante aujourd'hui." Au mois de février, il entra dans le Mississippi, trouva l'embouchure de la rivière Ohio, arriva finalement chez les Indiens Natchez. Il continua sa route et remarqua que le Mississippi se partage en trois chenaux. Enfin, au mois d'avril, il vit le beau golfe du Mexique, et il donna le nom de Louisiane à ces vastes pays qu'il avait découverts.

Maintenant, je reviens à mes moutons. Louons un *house-boat* et faisons

le voyage que La Salle a fait avec ses vingt Français. Chacun y trouvera des points d'intérêt pour son art. Voilà un voyage idéal, n'est-ce pas?

M. Vincent. Ah! Vous avez raison, mademoiselle. Notre art ne devrait pas nous faire oublier la grandeur de nos ancêtres. Avec une poignée d'hommes, de fragiles esquifs, ayant seulement l'aiguille aimantée, les étoiles, le vent, mais surtout son génie, La Salle fit une découverte devant laquelle avait échoué Ponce de Léon et Ferdinand de Soto! Nous pouvons bien nous écrier avec orgueil: Français, voilà ce que faisaient vos pères!

(Tous les convives se lèvent d'un commun sentiment.)

"Vive la France!"

(Ils chantent "La Marseillaise.")

REVIEW FOR FEBRUARY.

(FRANCIS W. PARKER SCHOOL.)

WILLARD STREETER BASS.

History.— The work for the month was a study of the industrial and social life of Virginia in the early part of the eighteenth century.

Last month we saw that the love for adventure, and the expectation of easy wealth by the discovery of gold, were leading motives in the colonization of Virginia, and that the colonists found adventures in plenty, but no gold. The lack of the latter, coupled with the disinclination of the colonists to spend time in growing corn, had come very near wrecking the colony, when an unexpected source of wealth was found in tobacco.

The class studied the methods of growing tobacco, following in detail the manner of preparing the soil, planting the seed, transplanting, harvesting, and curing the crop. (Carpenter's *North America*, pp. 103–8; Tarr and McMurray, *North America*, p. 165.) We then compared the labor involved in this process with that of growing corn, with which the pupils were already somewhat familiar. It was at once evident that tobacco was a crop which required a great deal more labor than corn. The class was, then, not at all surprised to learn that the Virginians supplied themselves with the needful laborers by importing bond-servants from England and negro slaves from Africa. Equally apparent was the origin of two distinct classes in Virginia, the laborers and the landowners, a social condition in marked contrast with that in New England.

In the conditions surrounding the boyhood and youth of George Washington we found concrete examples of all these phases of life, and we studied them with care. We read the stories of Washington's boyhood in Brook's *The True Story of George Washington*, and Seelye's *George Washington*. We also read extracts from Washington's diary, written while he was surveying for Lord Fairfax, and his "Rules of Conduct" ("Riverside Literature

Series"). The class took great pleasure in reading the latter, partly in seeing what standards the boy Washington set himself, partly in seeing how customs and manners have changed since his day; but, apparently, the greatest source of interest was in finding what things in the rules were applicable to our day and own schoolroom. Each child chose one of these rules and recited it at the Washington birthday exercises, described below. We also studied the surroundings of Washington's boyhood from pictures, and made large drawings of the house in which he was born, the field schoolhouse to which he went, his contest with the colt which he killed in breaking, and his camp while surveying.

The motive of the class in much of this work was the participation in the Washington birthday exercises of the school, which occurred on February 21. The part assigned to the fifth grade was the story of Washington's life to the close of his surveying trip for Lord Fairfax. From the stories which had been read to the pupils, they planned a continuous narrative, divided it into parts, and each pupil told a part at the exercises. To secure a greater spontaneity, the stories were all told from memory, and were never written and learned *verbatim*. Hence, although they were interesting, they cannot be given here.

Geography.— The study of the Atlantic coastal plain, begun in January, was continued. An experiment was devised to show roughly the method by which this plain was formed. The only place available for the experiment was a sink about forty inches long and six inches deep. Although this proved to be rather small, yet the effects which it was desired to show were unmistakable and plainly seen by the class. In order to be able to control the depth of water in the sink, we placed a ring of clay around the outlet. The water ran over the top of the ring to the outlet, and of course stood in the sink at whatever level we chose to keep the top of the clay. A rubber tube with a spray was fastened to one of the faucets so that the water fell in fine drops over the material which we had placed in one end of the sink. The material employed was the foundry sand used in map-modeling. Its use, however, cannot be wholly recommended, as it is too soft and too uniform in structure to show clearly the characteristic appearance of an eroded surface. After several attempts, however, fairly satisfactory results were obtained. The method of procedure and the results obtained are described below in a paper written by one of the pupils. The paper, as printed, contains a few corrections made by the teacher.

THE FORMATION OF A CONTINENTAL SHELF AND COASTAL PLAIN.

We tried an experiment in making a continental shelf. First we put some sand in a sink. Then we fastened a rubber tube to a faucet. There was a spray on the end of the faucet. Then we turned on the water very gently so that it fell like rain. The rain made rivers, and the rivers washed the sand down and made a continental shelf under the water. Then the

water sank and left the continental shelf above the surface. Now, the continental shelf is part of the continent. It is very flat and regular, and is called a coastal plain.— *Norman Preble.*

The work in industrial geography was a study of iron. The process of mining and smelting iron was studied from descriptions and pictures (Carpenter's *North America*, pp. 179–83, 219–23; Tarr and McMurray, *North America*, pp. 174–79). Several members of the class who had seen smelting gave vivid descriptions of parts of the process. The distribution of iron ore in the United States was studied, and the principal beds were located and drawn by the pupils upon the same maps upon which they had already placed the coal fields.

Nature study.—When the class, in January, was obtaining gas from coal —they had already learned that coal is formed from wood—several pupils asked: "Can we also get gas from wood?" By heating fine pieces of wood in a closed clay pipe, in exactly the same manner as we had treated the coal, we found that we could obtain gas from wood. The quantity of wood contained in a clay pipe was too small, however, to give an accurate idea of the relative amount of gas in various kinds of woods, or in a given weight of wood and the same weight of coal. We, therefore, repeated the experiment on a larger scale. The material which we used was supposedly dry oak and pine from the sloyd room. For retorts we used hemispherical iron sand baths four inches in diameter. The wood was cut into fine pieces and placed in the sand baths. From 80 to 100 grams of pine were used, and 150 or 200 grams of oak. We dried the wood for three days in an oven, kept as hot as possible without scorching the wood and then reweighed it. We then covered the wood to prevent contact with the air and heated it with a Bunsen burner. We tried several devices for collecting the gas driven off, but all of them were failures. The most satisfactory of the methods used is simply to cover the sand bath containing the wood with another of the same size and allow the gas, creosote, and other products to escape through the unavoidable opening between the two. After weighing the charcoal obtained, we burned it to ashes, which we weighed.

The following paper, printed without change from the first copy by one of the pupils, gives the results of the experiments, which occupied the laboratory periods for several weeks:

ANALYSIS OF WOOD.

I took 200 grams of oak wood and dried it. After I had dried it, it weighed 188.8 grams. Then I drove off the gas by putting the wood into a little pan and covering it with a layer of clay and plaster of Paris. Next I put it over a Bunsen burner. After the gas had been driven off, I found I had driven out something beside gas. It was tar. The charcoal weighed 55 grams.

Now I burned the charcoal and had ashes left. These weighed 1.3 grams.—*Margaret Prussing.*

Number.—A large number of problems grew out of the analysis of wood. The work was managed as follows: Each pupil kept the record of his own weighings. This was read to the class and placed upon the board, and the weights of the things which had to be found by subtraction were computed by each member of the class.

The class was then ready to obtain the percentage of water, volatile matter, carbon, and ashes in the wood analyzed. We arranged the work with the easiest problems first. The results are printed here as far as the best pupils in the class obtained them.

ANALYSIS OF WOOD.

Pupils.	Weights in Grams.							Per Cents.			
	Wood.	Dried.	Water.	Charcoal.	Volatile Matter.	Ashes.	Carbon.	Water.	Volatile Matter.	Carbon.	Ashes.
N. P.	100	87.	13.	45.	42.	1.	44.	13.	42.	44.	1.
J. L.	100	88.5	11.5	36.2	52.3	.9	35.3	11.5	52.3	35.3	.9
D. A.	100	94.	6.	.....	....	.8	.....	6.	....	....	.8
M. P.	200	188.8	11.2	155.	33 8	1.3	153.7	5.6	16.9	76.85	.65
A. F.	150	.....	....	131.	19.	.7	130.3	....[1]	$12\frac{8}{100}$	86.8	$.4\frac{8}{100}$
L. D.	150	.....	....	95.2	54.8	.7	94.5	....	$36.5\frac{1}{3}$	63.	$.4\frac{8}{100}$
C. H.	125	119.5	5.5	.....	....	1.	.....	4.4	....	....	.8
E. D.	85	81.2	3.8	30.	51.2	1.	29.	$4\frac{8}{17}$	$60\frac{4}{17}$	$34\frac{2}{17}$	$1\frac{8}{17}$
M. H.	104	95.	9.	.....	....	1.4	.....	....	....	....	....

The method of attacking the above problems was an extension of that described last month for the similar but easier problems in the analysis of coal. The part of the wood which was water, volatile matter, carbon, or ashes, was stated as a fraction, and this fraction was reduced to hundredths. No attempt was made to find a general method. It will be noticed that no one in the class succeeded in reducing 104ths to 100ths. Only two pupils succeeded in reducing 85ths to 100ths. The problems could be, and in the light of experience should be, made easier in two ways: (1) by choosing, in the first place, weights of wood that would give fractions reducible to 100ths without too much difficulty; (2) by rejecting all fractional parts in making and recording the weights.

These problems made evident considerable weakness on the part of some pupils in changing fractions to equivalent fractions of another denomination, and during the last fortnight a great many drill problems of this kind have been given.

English Composition.—The policy, described last month, of discussing with the whole class the mistakes recurring in the papers of a considerable number of pupils, and making rules for future guidance, has been continued. During the month, the principles of sequence of tenses and agreement of

predicate and subject have been discussed. All the pupils have written papers upon the "Analysis of Wood;" "Formation of Coastal Plains;" "A Story of Colonial Life."

OUTLINE FOR APRIL, MAY, AND JUNE.

HARRIET T. B. ATWOOD, WILLARD STREETER BASS.

History.— The remainder of the year will be devoted to a study of the French settlements in Canada and the Mississippi valley, the great struggle that determined whether France or England should control the destinies of North America, and the efforts of the English colonies toward a greater political freedom. The method used will be the vivid presentation of an event which is at once striking in itself, and characteristic of a long series of events, and which, therefore, may fairly represent the whole series or complete movement.

The following events will be chosen for this purpose: (1) Champlain discovers the lake which bears his name and engages in battle with the Iroquois Indians. (2) Saint-Lusson raises a cross and the French arms at Sault Ste Marie and takes possession of the West for France. (3) La Salle descends the Mississippi to its mouth and erects a column with the arms of France, claiming possession of the entire Mississippi valley. (4) George Washington is sent to warn the French to leave the country claimed by the Ohio Company of Virginia. (5) Braddock is defeated. (6) Ticonderoga. (7) Niagara. (8) Wolfe at Quebec.

Besides this study of events the characteristics of the French colonists will be compared with those of the English. The three motives of the French in their efforts to colonize North America, the desires to explore and trade, to convert the Indians, and to build up a trans-Atlantic French empire offer a sharp contrast to the New England colonists who came to make homes and secure freedom in their own lives. This contrast will be sharply brought out by comparing a typical French settlement with its trading post, its military guard, and its mission, with the New England town, studied in December, and the Virginia plantation, studied in February.

REFERENCES: Parkman, *Pioneers of France in the New World*, Part II, chap. x; *La Salle and the Discovery of the Great West*, chaps. iv, xx; *Montcalm and Wolfe*, chaps. ii, v, vii, xxiv, xxv; Seelye, *Life of George Washington;* Catherwood, *Story of Tonty;* McMurray, *Pioneer History Stories.*

The events of the Revolutionary War selected for full and vivid narration are: (1) The Boston Tea Party. (2) The battles of Lexington and Concord. (3) The battle of Bunker Hill. (4) The Declaration of Independence. (5) The Winter at Valley Forge. (6) Surrender of Cornwallis.

The story of the Boston Tea Party will serve as an illustration of the restraints of trade placed on the colonies by the mother country and as an introduction to a little further study of them. Following this come the other

stories of the devices employed by the colonists to avoid trade with England and a study of the industries of the home at the point of their highest development.

REFERENCES: Lodge, *The Story of the Revolution;* Winsor, *Narrative and Critical History of America*, Vol. VI; Fiske, *The War of Independence, The American Revolution.*

Oral Reading.—Longfellow, "Paul Revere's Ride;" Emerson, "Concord Fight."

Geography.—The study of the French settlements necessitates a study of the entire St. Lawrence and Mississippi basins. The work will begin with Champlain and his trip to the lake named for him, and will in general follow quite closely the routes of the explorers. The topography will be studied by the use of the sand table. To give vivid images of the country as it is now, pictures will be used. From these images the appearance of the country at the time of its first exploration will be inferred.

The Appalachian mountains, which separated the English and the French until each had secured a firm foot-hold in his own part of the continent, also determined the points for whose possession many of the great struggles of the war were to take place. As there were no cities or points of political importance to be defended or captured, the strategy of the war depended almost exclusively upon the topography of the country. The class will follow Washington's journey to Fort Le Boeuf with care and note his remark about the advantage of building a fort at the forks of the Ohio. When it is evident that the decisive struggle is at hand, the pupils will carefully examine the whole Appalachian system, with a view to finding the easy routes by which the combatants can get at each each other, and will then decide at what points the great struggles are likely to occur. The historical narrative will then show the accuracy of the reasoning.

Following the work upon the Appalachian mountains, the Rocky mountains will be studied in order to secure a complete topographical treatment of North America. The year's work in topography will be summed up by a map showing the relief and the location and partings of the various river basins.

Distribution of industries in North America (continued). (6) Agriculture: (*a*) Agricultural products in daily use. (*b*) Principal crops produced in North America, as wheat, corn, oats, sugar cane, cotton, tobacco, etc. (*c*) Regions where these crops are produced, their general geographical conditions, and the soil and climatic factors which have to do with agriculture. This study will call for an investigation of the methods of irrigation in certain parts of our country. (*d*) Methods of farming in different sections: preparing the soil; planting, cultivating, harvesting of crops. In considering the different phases of work on a farm, a study will be made of the agricultural implements which are used in various parts of the country. Trips will be taken to a farm and to the Field Museum, for the purpose of seeing primitive

agricultnral implements, and to the McCormick reaper works, to study modern farm implements and machinery. (*e*) Marketing of farm products; methods of transportation and storage of the different crops; location of commercial centers where the crops are stored and from which they are shipped to various parts of this country or exported; foreign countries to which portions of the principal American crops are sent. (*f*) The influence of the agricultural life upon the settlement and development of different regions of our country.

REFERENCES: Powell, *Physiographic Regions of the United States;* Adams, *A Commercial Geography;* Tarr and McMurray, *North America;* Reports of Department of State, Washington, D. C., *Commercial Relations of the United States,* and *Review of World's Commerce;* Shaler, *Nature and Man in North America,* and *Story of Our Continent;* Gaye, *The Great World's Farm.*

Nature-study.— The nature-study will be based upon the work which the grade will do in the school garden, and upon field trips taken by the children.

Field trips proposed for the spring: (1) To the Desplaines river at River Forest; (2) to ravines at Lakeside and prairie west of Lakeside; (3) to sand dunes; (4) to swamp; (5) to the truck farms on outskirts of city.

The main features of work in the field will be sketching with crayon and water colors, taking photographs, collecting specimens, and taking notes. The phases of work to be especially considered are: (1) The topographic forms of the regions visited, namely the ravines, lake cliffs, beach, dunes, swamp, river bluff, and flood plain; (2) the vegetation of the areas; characteristic flora of prairie, upland forest, ravine, lake cliffs, beach, flood plain, swamp, and dunes. The aim is to make the children somewhat familiar with the characteristic plant societies, and to lead them to relate the differences noted in the flora to differences in topography, soil, available moisture, and exposure to heat, light, and wind.

The work based on the school garden will be:

1. Selection of the best site for a garden and a consideration of the factors which influence the growth of plants.

2. Examination of soil in our garden and of the different soils which came from various regions visited on field trips. What soil is best for a garden? How shall we determine the best soil?

3. Experiments to determine the relative values, for garden purposes, of dune sand, swamp muck, clay from bluff, leaf mould from woods, loam from garden: (*a*) to determine the capacity of various soils to retain water; (*b*) to determine rate of evaporation from different soils; (*c*) to determine the constituents of the various soils;[1] (*d*) to test the soils, seeds will be planted in series of pots containing the various soils; one series will be kept very moist,

[1] For detailed directions for the foregoing experiments see COURSE OF STUDY, Vol. I, No. 8, p. 734.

another under average conditions, and the third will be exposed at intervals to drought conditions. The class will observe which soil shows disadvantages when kept very moist, and which when allowed to become dry.

4. A visit will be made to a greenhouse to see how the gardeners prepare their soil, and a sample of their garden soil will be brought home and examined. In what ways do soils become mixed in nature? Note effect of percolating waters; of burrowing animals; of ants and earthworms. Consider the work of ants and earthworms as soil mixers.

5. Choice of the most favorable time for planting seed. Frequent observations as to the temperature of atmosphere and of the soil in the garden at various times of the day. If possible, an experiment will be made to determine the most favorable temperature for the germination of seeds.

6. Arrangement of plants in spaces allotted for garden purposes which will make it possible for the different species to receive the proper amount of light. The children will make a rough classification of the garden plants as to the amount of light required for their best growth. They will obtain their information from the gardeners at the greenhouse, or from florists' catalogues. Experiments will be made to show the effect of different degrees of light upon growth and upon the manufacture of starch in the leaves.

Zoölogy: A study of animal life found in the garden, with the idea of discovering which animals are helpful and which injurious to plants.

Meteorology: The weather records will be continued. At the end of the year a chart will be prepared showing the relation of the sun's slant to temperature, and an attempt will be made to show the relation of latitude to mean annual temperature.

REFERENCES: Salisbury and Alden, *Geography of Chicago and Environs;* Cowles, *Plant Societies of Chicago and Vicinity;* Comstock, *Insect Life;* Jordan and Kellogg, *Animal Life;* Coulter, *Plant Relations* and *Plant Structures;* Barnes, *Plant Life;* Atkinson, *Elementary Botany;* King, *Soil;* Darwin, *Formation of Vegetable Mould through Action of Earthworms;* Chapman, *Bird Life;* Herrick, *Home Life of Wild Birds;* Weltje Blanchan, *Bird Neighbors.*

Mathematics.— In the work in nature-study outlined above, a knowledge of the soil of sand dune, beach, lake cliff, prairie, and swamp is required. An analysis will be made of each one of these to determine the amount of (1) gravel, (2) fine sand, (3) clay, (4) organic matter, present in the various soils, and also the relative amounts of water retained by the different soils. The results will be expressed in per cents. (See Jackman, *Nature Study in the Grammar Grades,* pp, 45–7.)

As in previous months the children will make, to a definite scale, working drawings of all objects to be constructed in the shop. A third phase of the number work will be the reduction of recipes needed in cooking (see January number, p. 388).

Music (Zoe Smith Bradley).— Gurlitt, "Spring Rain;" Reinecke, "Swinging;" Gilchrist, "The North Wind;" Eleanor Smith, "Dandelion

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Ladies;" "May Time;" *Modern Music Series*, Book II; Reinecke, "Spinning Song," *ibid.*, Book I; "Easter Ode," *ibid.*, Book III; general school songs.

Oral reading and dramatic art.—The study of Irving's *Rip Van Winkle* continued. In addition the children will study and memorize selections to be chosen by Miss Fleming for the exercises on Memorial Day.

Textiles and woodwork.—The children will finish weaving the small rugs begun in March. In the shop they will make the stakes and necessary implements to use in the garden, and will assist in constructing the framework of the arbor which has been planned for the beautification of the school grounds.

Home economics.—The study of cereals continued.

Physical training for April (Carl J. Kroh)—*Boys.*—Boxing: attacks and guards, moving about. Free gymnastics: regular order (hand apparatus). Apparatus gymnastics: rear, side, and front vaults over ends of long horses; length-jumps over ropes and bucks (rope adjustment between boards and bucks). Individual exercise: optional practice (climbing, jumping, etc.) prescribed. *Girls.*—Regular practice-order in free gymnastics: movement combinations in like directions, executed in alternate, intersected, and simultaneous orders (adapted starting positions). Indian club swinging exercises, single and double arm and hand circles in like directions. Apparatus gymnastics: horizontal ladders—swing-traveling forward, backward, and sideward, with alternate and simultaneous lifting of hands; ditto, upward and downward on beams and rounds of slant ladders; practice of swinging and halting in place. Double horizontal bars (divided support): simple forward vaulting in connection with facings torward points of support. Suspended (adjustable) rings: body-circling in hang-standing position. Antagonistics: pushing and pulling with various hand-grasps, with hand apparatus, wands and handle-straps.

SIXTH GRADE.

JENNIE E. CURTIS.

OUTLINE FOR APRIL, MAY, AND JUNE.

Literature and dramatic reading.—Scenes from *Ben Hur*, including the chariot race; *Ulysses Among the Phaeacians; Paul Revere's Ride; Grandmother's Story of the Battle of Bunker Hill;* Holmes.

History and geography.—Persian wars; Aristides and Themistocles. Finish reading *Ten Boys on the Road from Long Ago to Now; The American Boy; The Early Life of Washington.* Situation in and around Boston in 1775, before the battle of Bunker Hill; fortifications of Bunker Hill; account for the attack of the British upon Bunker Hill (use molding and drawing);

show relation of this event to the causes of the war. How large a part did geography play in these movements? Note carefully the results of Bunker Hill. Washington, commander-in-chief. Plan of Burgoyne's invasion. What part did geography play in its failure? Study carefully the results. Why was the movement of events comparatively slow during the remainder of the war? Study the geography of the southern states, the plan of the last part of the war, and the effect of the geography on the carrying out of the plan. What advantage did the British fleet give England? Notice the use of the French fleet at Yorktown. Results of the war both in England and America.

In working out the above, the geographical conditions of each scene must be thoroughly studied.

REFERENCES: Fisk, *War of Independence* and *American Revolution;* Irving, *Life of Washington;* Coffin, *The Boys of '76;* Frothingham, *The Siege of Boston;* Tyler, *The Literary History of the Revolutionary War;* Bancroft, *History of the United States*, Vol. III; Lodge, "The Story of the Revolution," *Scribner's*, 1898; Rice, *Course of Study in History and Literature.*

Nature study.— Complete the study of the change of seasons — (During the entire school year we have taken a few minutes each week to note the time and location of sunrise and sunset, length of noonday shadow, and relation of these to temperature). Note the relation of daily temperature and condition of ground, insect life, and animals that have hybernated; the development of buds, and the planting of all kinds of grain and vegetables. Complete, in a general way, the study of the circulation of the atmosphere.

Mathematics.—

(Date.)

To Mrs. ———, Dr.

March 10–14	4 qts. milk	@	$0.07	- - -	——
	9 " "	@	.07	- - -	——
	5 " "	@	.07	- - -	——
	7 " "	@	.07	- - -	——
			Less 10%	- - -	——

In the form of this bill we receive daily the account of our indebtedness to the home economics department. Each child fills it out, deducting the discount. He finds the indebtedness of the class and of each individual for the month. The pupil who is treasurer collects, pays the bills, and has them receipted.

Each subject in mathematics that will help in our other work will be developed or reviewed, and made familiar by the necessary drill. The subjects needed are: percentage, mensuration, longitude and time, liquid and dry measure; interest, simple and compound.

Physical training.— In addition to the regular work for April (see fifth grade) some of the following Spartan games will be played in correlation with our study in history: The Foot Race; Leaping with Dumb-bells;

Wrestling; Casting the Spear; Spartan Ball; Chain Dance; Throwing the Discus. Each child will make his own discus, a circular piece of wood eight inches in diameter and one inch thick.

French (Lorley A. Ashléman).—

LE PALAIS DE VERSAILLES.

Personnages: Le grandpère; la grand'mère; la gouvernante; Jean; Estelle; Julien; Fanchette; Louis; Marguérite; le domestique.

La scène se passe dans une chambre de famille. Au fond on voit une porte à deux battants. Une grande toile blanche est suspendue à la porte.

Estelle (regardant ses grandparents avec tendresse). Que c'était gentil de vous de nous inviter tous à passer la nuit chez vous! Nous nous en faisons toujours fête.

La grand'mère (se lève, met la main sur l'épaule d'Estelle et regarde le grandpère d'un air attendri). Il te faut remercier ton grandpère, ma chère Estelle. C'est lui qui a imaginé cette surprise.

Tous les enfants. Merci, merci, grandpère!

Le grandpère (souriant). Je suis bien content que vos mamans vous aient permis d'accepter mon invitation. Tous savez sans doute que mademoiselle compte passer trois jours à Versailles la semaine prochaine: un jour sera consacré au palais, un autre aux jardins, et le troisième, qui, à mon avis, sera la journée idéale, vous le passerez au Grand et au Petit Trianon. (Se tournant vers la gouvernante.) Mademoiselle m'avait invité d'être des vôtres. Malheureusement il m'est impossible d'accepter son aimable invitation!

Fanchette (d'une voix désolée). O grandpère!

Le grandpère (lui prenant les mains). Voilà, pourquoi nous irons à Versailles, aujourd'hui même, afin de voir le palais!

Julien (d'un air étonné). Aujourd'hui, grandpère? Mais il est déjà cinq heures du soir!

Le grandpère. Oui, Julien (montrant la toile blanche), avec l'aide de ma lanterne magique!

(Les enfants battent des mains; le grandpère sonne pour le domestique.)

La grand'mère. Qui peut me donner quelques détails sur la vie de Marie Antoinette? On ne peut visiter Versailles sans parler de cette pauvre reine. Y a-t-il quelqu'un de vous qui

puisse me dire l'année où naquit Marie Antoinette? (Se tournant vers la gouvernante.) N'est-ce pas, mademoiselle, que vous étudiez l'histoire de France à présent?

La gouvernante. Oui, madame.

(La porte à gauche s'ouvre et le domestique paraît.)

Le domestique. Que désire monsieur?

Le grandpère. Ayez soin de vous tenir prêt à baisser les stores. Je vous avertirai d'un signe lorsqu'il sera temps.

Le domestique. Oui, monsieur.

La grand'mère. Eh bien, Julien, en quelle année est-elle née, la pauvre Marie Antoinette?

Julien. Je ne sais pas, grand'mère. J'oublie toujours les dates.

Marguérite (timidement). Je puis vous dire la date. Pour me rappeler les dates—(ne riez pas de moi)—je compose un vers, et, comme je n'oublie pas les vers, je me souviens aussi de la date.

La grand'mère. Ce qui est très ingénieux, ma mignonne, mais il doit être un peu difficile de faire des vers. Veux-tu nous répéter le tien?

Marguérite. "Si devant cinquante-cinq est mis
Le numéro dix-sept,
C'est la premiére année de la vie
De Marie Antoinette."

Tout le monde. Bravo, bravo!

(Le grandpère fait signe au domestique de baisser les stores.)

Le grandpère. Je vais maintenant vous montrer Marie Antoinette.

(Les enfants poussent un cri de joie.)

La gouvernante (se tournant vers Marguérite). Oui, Marguérite, Marie Antoinette est née en 1755, à Vienne. Peut-être vous pourrez nous dire encore quelque chose sur sa vie?

Marguérite. Elle était la fille cadette de François I^er^, l'empereur d'Allemagne.

Le grandpère (l'interrompant). Mais c'est très bien, ma petite! Voici l'empereur. Qui était sa mère?

Marguérite. Marie Thérèse.

Le grandpère. En effet, et la voici cette femme de tête, mes enfants.

La gouvernante. Fanchette, quand Marie Antoinette est-elle allée en France?

Fanchette. Elle épousa le roi Louis XVI à l'âge de quinze ans.

Le grandpère. Ah, Fanchette, Louis XVI n'était pas roi à l'époque de son mariage. Louis XV, que voici, régnait toujours. Il ne devint roi que quatre ans plus tard, à la mort de son grandpère.

Jean. Alors, comment l'appelait-on?

La gouvernante (souriant au grandpère, comme pour avoir sa permission). Le fils aîné des rois de France portait le titre de dauphin. Le père de Louis XVI étant mort avant Louis XV, c'est son fils qui devint le dauphin.

Le grandpère. Merci, mille fois, mademoiselle. Voilà le roi Philippe. Mademoiselle, n'est-ce pas, vous aurez bien la bonté de nous expliquer le rapport qu'il y a entre le roi Philippe et le titre de dauphin, qu'on donnait à l'héritier présomptif du trône?

La gouvernante (riant). Je suis donc l'encyclopédie! Eh bien, on céda la province du Dauphiné à Philippe VI, roi de France, à condition que le fils aîné prît le titre de dauphin.

Le grandpère. Pardon, mademoiselle, mais voici la province du Dauphiné (se tournant vers la gouvernante); veuillez reprendre votre explication, mademoiselle?

La gouvernante. Depuis ce temps le fils aîné est appelé le dauphin et son épouse la dauphine.

Le grandpère. Revenons à Marie Antoinette!

Louis. Grandpère, les Français n'ont-ils jamais aimé Marie Antoinette?

Le grandpère. Certainement, mon garçon; les Français l'ont aimée. Quand elle était dauphine elle était même l'idole du peuple. Les gazettes racontaient mille petites anecdotes sur son compte: comment, pendant un grand incendie à Paris, elle porta secours aux pauvres. (Se tournant vers la grand'mère.) N'est-ce pas, grand'maman, tu veux bien nous raconter les anecdotes relatives à cette époque de sa vie?

La grand'mère. De bon cœur.

Le grandpère. A propos, voici Louis XV, que le peuple haïssait, malgré son surnom de "bien aimé."

Jean. Pourquoi, grandpère ?

Le grandpère. A cause des abus qu'il permettait. Louis XV avait eu quelque grandeur, mais toute cette gloire s'était perdue dans les débauches scandaleuses de sa vieillesse. Marie Antoinette, d'un autre côté, s'était attiré l'amour de tous par ses bontés pour les pauvres.

La grand'mère. La voilà, à la chasse! Vous remarquez, qu'elle ne veut pas traverser ce champ. Elle préfère manquer le spectacle de la curée, plutôt que de traverser un champ de blé et ainsi faire tort au cultivateur. La voici, un autre jour, qui soigne son postillon, tombé du carrosse. Dans son excitation de porter secours au malheureux, elle appelle les pages et les palefreniers "mon ami." Elle montre par toutes ces petites choses qu'elle avait du cœur, aussi elle gagnait partout l'amour du peuple.

Ah! la voici à Fontainebleau. Comme elle suivait la chasse en voiture, on lui dit qu'un pauvre vigneron venait d'être tué par un cerf et que sa femme qui avait reçu la nouvelle était presque évanouiée de douleur. Marie Antoinette vola en bas de la calèche et se jeta presque au cou de la malheureuse femme. Elle essaya de la consoler, l'assura que l'on aurait soin de ses enfants. Elle la fit même mettre dans sa voiture pour la conduire auprès de son mari, et lui donna sa bourse.

Estelle. Mais, grand'mère, comment a-t-elle perdu sa popularité ?

La grand'mère. Parceque, ma chérie, pour une reine, il est très important d'agir sur réflexion, et non pas sous l'impulsion du moment, comme le faisait Marie Antoinette.

Fanchette (vivement). Mais elle était si jeune quand elle s'est mariée! quinze ans; pensez donc!

La grand'mère. Cela a sans doute contribué à ses malheurs.

Le grandpère. Voici Choiseul, le ministre de Louis XV. C'est lui qui a plus qu'aucun autre poussé le roi à choisir Marie Antoinette pour son petit-fils. Choiseul était alors en termes d'amitié avec l'impératrice Marie Thérèse. C'est Marie Thérèse qui chargea Choiseul de trouver un précepteur pour sa fille. Choiseul choisit l'abbé de Vermond. L'abbé de Vermond trouva

que la future reine de France ne connaissait qu'un peu de latin, un peu plus d'italien, et qu'elle parlait assez mal le français.

Marguérite. Grandpère, ma maîtresse de musique ma dit qu'elle avait joué au clavecin avec Mozart!

Le grandpère. Ce qui est vrai. Mais même dans la musique elle n'était pas forte, bien qu'elle l'eût toujours aimée. Elle dansait cependant très bien.

L'abbé de Vermond n'avait que dix-huit mois pour faire son instruction. Il lui apprit ce qu'il jugeait le plus nécessaire—la biographie des reines de France, la généalogie de la maison de Bourbon, dans laquelle elle allait entrer, et surtout le français et la géographie de notre belle France.

Julien. Était-elle très intelligente?

La grand'mère. Oui, Julien, mais elle était un peu paresseuse. Pour la faire travailler il fallait toujours l'intéresser.

Le grandpère. Enfants, nous allons maintenant à Versailles! Voilà la gare.

Jean. Je me la rappelle bien. Maman et moi nous avons une fois pris l'omnibus au palais. Nous sommes montés sur l'impériale, grandpère.

Le grandpère. Voilà le palais!

Estelle. Le palais est immense, mais je le croyais plus beau!

Le grandpère. Il faut le voir du côté du parc. Voyez, c'est d'ici qu'on a la meilleure vue! N'est-ce pas que ces jardins sont superbes? Nous y passerons une journée idéale! Voici la chapelle.

Fanchette. Qu'elle est belle!

La grand'mère. C'est ici que Marie Antoinette épousa le dauphin. Ah! regardez, mes enfants—la voilà, le jour de son mariage. Elle n'a que quinze ans, sa figure est brillante de joie et de santé sous ses jolis cheveux blonds. Vous voyez le page qui porte le bas de sa robe; sa main est dans celle du prince. Elle est à la tête de toute la famille royale, puis viennent les nobles et les dames de la cour.

Jean. La chapelle est-elle aujourd'hui comme elle était au temps de Marie Antoinette?

La gouvernante. Oui, on ne l'a pas beaucoup changée.

Estelle. Qui la fit construire?

La gouvernante. Louis XIV, vers la fin de son règne, pour sa seconde femme, madame de Maintenon.

Le grandpère. Voici madame de Maintenon!

La gouvernante (reprenant). C'est aussi Louis XIV qui fit ériger le palais et les jardins. Pour la construction du château et des jardins il dépensa plus d'un miliard.

Le grandpère (l'interrompant). Pardon, mademoiselle, mais voici Louis XIII. Qu'était Versailles sous son règne?

La gouvernante. Versailles n'était qu'un rendez-vous de chasse. En 1630 Louis XIII y bâtit un château, le qui est la partie centrale du château actuel.

Le grandpère. Je vous remercie, mademoiselle. Voilà la salle de l'opéra. C'est dans cette salle qu'un grand nombre des fêtes données par Marie Antoinette ont eu lieu.

Le domestique (à la porte). Le dîner est servi!

(Les enfants poussent un cri de désappointement.)

Le grandpère (souriant). Allons toujours dîner; nous finirons notre voyage plus tard. (S'adressant au domestique.) Allumez le gaz, François.

(Il donne le bras à la grand'mère, et tout le monde se dirige vers la salle à manger.)

SEVENTH GRADE.

VIOLA DERATT.

OUTLINE FOR APRIL, MAY, AND JUNE.

History.—1. Completion of the book-binding begun in the winter quarter. Study of the methods of making books in mediæval times. Value of these manuscripts. Chained books. Traveling students. Other occupations of the monks. The feudal government of the monastery lands. Comparison between the castle and monastery. Stories of Herlwin and the Abbey of Bec, St. Francis of Assisi, Columbanus.

REFERENCES: Putnam, *Books and Their Makers;* Church, "Life of Anselm," *Harper's Magazine,* Vol. LX, p. 343, and Vol. L, p. 518; La Croix, *Military and Religious Life of the Middle Ages;* Aldrich, *Friar Jerome's Beautiful Book.*

2. The mediæval city; Nuremberg. Position and topography of Franconia (pictures); relation of the city to the surrounding territory; fortifications of the city; castle of the Burggraf; story of Ekkelin von Gailingen;

relation of the Burggrafs of Nuremberg to the present German Emperor; coats of arms of city and of Burggraf; the council and council-house; occupations of citizens; guilds: laws concerning industries; the position of Nuremberg on the line of Eastern travel; methods of protecting merchants traveling; the handicraftsmen; Adam Krafft, Peter Vischer, Albrecht Dürer; the Meistersingers, Hans Sachs.

REFERENCES: Headlam, *Nuremberg;* Longfellow, "Nuremberg;" Lewis, *History of Germany; Harper's Magazine*, Vol. I, p. 75; Zimmern, *The Hansa Towns.*

3. The changes from mediæval to modern life, beginning with travel and commerce. The period of geographical discovery. The crusades as explorations, results on travel of this information, the routes to the East; the "known world" according to Strabo and Ptolemy; the making of maps; geographical myths of "Atlantis," "St. Brendan;" "Prester John," "Antilia;" Marco Polo, and the defining of the map on the East; the use of the Monsoons in eastern commerce. Search for a sea route to China; the compass and navigation in the Atlantic; the Portuguese investigations in astronomy and navigation; their exploration of islands and African coast; their discovery of the possibility of crossing the equator. The story of Columbus; his connection with the Portuguese mariners and his adventurous life; the wars with the Moors; the monastery of Rabida; the equipment of a sailing vessel of this period and means of subsistence on a long voyage; the search for the grand Khan's rich kingdom: the West Indies. Vasco da Gama's voyage to India. What part of the earth now remains unknown? The circumnavigation of the earth by the ships of Magellan.

REFERENCES: Keane, *The Evolution of Geography;* Freeman, *Historical Geography of Europe;* Bunbury, *History of Ancient Geography;* Tozer, *History of Ancient Geography;* Bevan and Philott, *Mediæval Geography;* Cooley, *History of Maritime and Inland Geography;* Fiske, *The Discovery of America;* Payne, *History of America;* Draper, *Intellectual Development of Europe;* Vincent, *Commerce and Navigation of the Ancients in the Indian Ocean;* Lee, *Travels of Ibn Batuta;* Yule, *Cathay and the Way Thither; ibid., Marco Polo;* Winsor, *Narrative and Critical History of America*, Vols. I, II; Marco Polo, *Travels;* Cunningham, *Growth of English Commerce and Industry;* Jacobs, *Story of Geographical Discovery;* N. Ponce de Leon, *The Caravels of Columbus* (Chicago Public Library, V 1562); Maundevil, *Travels;* Ford, *The Writings of Columbus;* Guillemard, *Magellan;* Irving, *Columbus;* Kingsley, *The Hermits;* "Vasco da Gama," *Century Magazine*, Vol. II, p. 163; "Marco Polo," *Harper's Magazine*, Vol. XLVI, p. 1; "Magellan," *ibid.*, Vol. LXXXI, p. 357; "Three Great Voyages," *ibid.*, Vol. XX, p. 234; "Columbus," *Century Magazine*, Vol. XXII, p. 123; "Columbus," *Harper's Magazine*, Vol. XXXVIII, p. 721; "Columbus," *ibid.*, Vol. LXXXIV, p. 728; "Columbus," *ibid.*, Vol. LXXXV, p. 681; "Columbus," *ibid.*, Vol. LXV, p. 729; "Columbus," *ibid.*, Vol. XLVI, p. 640; "Columbus," *ibid.*, Vol. LIV, p. 1.

Children's references: Wright, *Marco Polo;* Brooks, *Marco Polo;* Knox, *Marco Polo;* Towle, *Marco Polo;* Hall, *Stories of Adventure;* Winsor, *Columbus;* Seelye,

Columbus; Hale, *Columbus; Stories of Discovery;* Towle, *Vasco da Gama; Magellan;* Butterworth, *Magellan;* Beazley, *Prince Henry the Navigator.*

Geography.—Spain: position with respect to Africa; the Moorish invasions; the northern mountains a shelter to the Goths; description of Moorish life, showing climate of southern Spain; position of Spain with reference to Atlantic explorations.

The northern slope of the Alps: France and Germany; products in the Middle Ages and in the present; routes of commerce from north to south and from east to west; Nuremberg's position on the eastern route.

Determination by observation and measurement of our own latitude; making of a map, first as a rough itinerary of a field trip and finally by actual measurement with instruments; making of compass, cross-staff, log, etc.

Study of sailing-routes, trade winds, and currents; effect of trade winds on Columbus's route.

The geography will support the history throughout; the country and peoples through which the Polos traveled will be pictured; Columbus, da Gama, and Magellan's voyages will give a comprehensive view of the world-map.

Mathematics.—Find the latitude of the school building (1) by the plumb-line, or gnomon; (2) by the sciameter; (3) by universal instrument; (4) by measuring the altitude of the pole star. Longitude determined by means of the chronometer, mariner's compass, and known rate of sailing; study of mariner's compass.

Make a survey and draw to scale a map of a tract near school building, (1) showing its form; (2) showing location of objects upon the map; (3) showing contour lines. Employing scale given on the map, measure the length of Marco Polo's voyages. How long did it take him? Find time taken to reach China, from Italy, by present methods. Trans-Siberian Railroad.

Study of force due to wind pressure.

TABLE OF WIND PRESSURES.

A wind	moving	6½	mi. per hr.	exerts	3⅓	oz. per sq. ft. pressure
A wind	moving	16¼	mi. per hr.	exerts 1 lb.	5	oz. per sq. ft. pressure
A wind	moving	32½	mi. per hr.	exerts 5 lb.	3	oz. per sq. ft. pressure
A hurricane,	moving	80	mi. per hr.,	exerts 31 lb.	4	oz. per sq. ft. pressure
A violent hurricane,	moving	98	mi. per hr.,	exerts 46 lb.	12	oz. per sq. ft. pressure

Measure the velocity of the wind on different days. Use anemometer. Compute the wind pressures on various structures about the school building for wind velocities given by the anemometer. Force of a monsoon.

Circumnavigation of globe suggests the form of the earth.

Reasons for believing the earth is a sphere.

Shortest distance between two points on the surface of a globe. On what line does a ship attempt to sail?

Climatic conditions prevailing in the different latitudes reached by Columbus or Magellan may lead to a study of the effect of the varying slant of the sun's rays on the temperature of the earth's surface. Discussion of data furnished by the skiameter. This requires elementary algebra.

Comparison of rates of sailing in days of Marco Polo with rate today.

In connection with Ptolemy's map, study early methods of finding sun's distance from earth. This demands elementary geometry.

Oral Reading.— Lowell, *Sir Launfal;* Scott, *Marmion;* Joaquin Miller, "Columbus."

Nature study.— Meteorological records and summaries; planting and care of the garden; observation of the advancing season; field trips for observation of birds and of plants.

Music.— "Easter Ode," *Modern Music Series*, Book III; Molloy, "The Postillion," *Beacon Song Collection;* Oelschläger, "Onward We Float," *ibid.;* Keon, "Sweet May," *Modern Music Series*, Book II; "May Time" (Polish), *ibid.;* "King Richard, Lion Heart," *Songs of Life and Nature.*

Physical training for April (Carl J. Kroh).— Class-boxing; attack and defense, in double files. Striking-bag practice. Springing exercises, hopping, skipping, and jumping in connection with facings, as class exercises. Development of characteristic action-forms, continued; hurling of grip-balls, shot-putting. Group-work in apparatus gymnastics: Adjustable flying rings, free body-circling in still-hang support; forward swing-jumps from high standing starts over ropes (height and distance adjustment). Swinging in still-hanging positions with sharp thigh-flexions and alternate and simultaneous hand-lifting, and of forward swings to circle around rings with left, right, and both legs (to land, or re-grasp). Serpentine climbing on ladders. *Girls.*— Practice of giant-strides, and swing-jumps on round swings. Exercises on beams and rounds of horizontal and slant ladders: (1) in still-hanging positions; (2) with alternate and simultaneous hand-lifting; (3) swinging. Antagonistics: Stick-wrestling; team pushing and pulling in various positions and locks, with long poles.

Monthly illustration of practice-order, morning exercises.

Cooking.— The right application of heat to the different food principles. Water as a means of conveying heat. Proteid cookery, illustrated by eggs, milk, and cheese. Starch cookery, illustrated by the preparation of vegetables and cereals. Combinations of starch and albumen in simple desserts. Doughs and batters, and methods of making them light. Experiments to aid in the solution of problems in physics which arise in the cooking.

The food cooked will be served at the noon luncheon of the class, and from time to time other classes will be invited as guests.

EIGHTH GRADE.

KATHARINE M. STILWELL.

OUTLINE FOR APRIL, MAY, AND JUNE.

History and applied mathematics.— The work, as outlined in the February issue, will be continued in the spring quarter. Current events will be observed every week.

In March the general topic will be cotton. The pupils will study the cotton-gin, the spinning-jenny, the power-loom, life on a southern plantation, slavery, the Louisiana purchase, the admission of states — one northern, one southern — and especially the admission of Illinois.

Mathematical problems, similar to the following, will be used in teaching the history.

How long since the invention of the gin? One cotton-gin will do the work of how many slaves? Cost of gin and of operating it? How much cotton can be ginned daily? What is the average yield of cotton per acre? If the tract between the rivers, creek, and road represents a plantation drawn to a scale, about how much cotton will it yield at the average yield per acre?

What are the cotton states? How long since the cotton states were admitted?

How much was paid for the Louisiana purchase? If this was paid in silver coin, how much pure silver was required, a silver dollar weighing 412½ grains and containing .9, by weight, of pure silver?

The westward movement will be the subject in April. The topics to be discussed are the Missouri Compromise, the Lewis and Clarke expedition; the geography of the Louisiana territory, Oregon, Texas, California; the discovery of gold, and the mining industry.

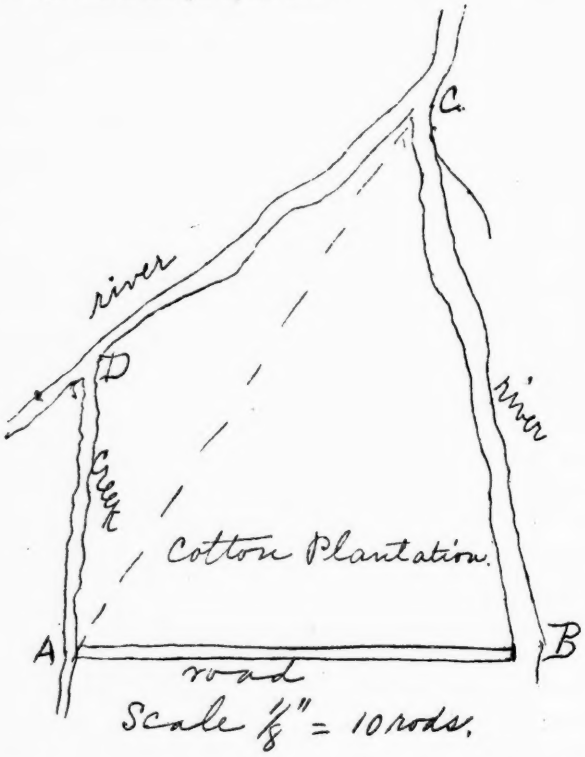
SUGGESTIVE PROBLEMS.

Latitude and longitude of center of population by census years (*Daily News Almanac*, p. 49.

1. Find the change in the latitude of center of population from 1790–1800; 1800–1810; etc.
2. Find change in center of longitude for the same.
3. What does the ten-year change in longitude amount to in miles?
4. What does the change in latitude amount to? (See *Conklin's Argument Settler.*)
5. During which ten years was the change greatest? Can you tell why?
6. To find the total change of the center of population during any ten years, square the changes in latitude and longitude, add the squares, and extract the square root of the sum. Can you explain the reason for this rule? Find the total change for the period found in problem 5.

If these problems disclose ignorance of latitude and longitude on the part of the pupils, these subjects will be cleared up.

7. What was the extent of the Louisiana territory in longitude? in latitude? What was its cost per square mile?



8. Into how many states and territories was the Louisiana territory divided? What was the average area?

A study of angles will be made, so far as is necessary to an understanding of latitude and longitude.

Algebra will be studied with the geometry, by applying the notation and methods of algebra to the geometrical figures.

Any arithmetic topics not understood will be taken up whenever the need for the topic shows weakness or haziness in the pupil.

May: Railroads. The senate of 1850, its problems, compared with the

problems before our present senate. Kansas and Nebraska. The story of Lincoln.

In related mathematics the pupils will learn how railroad curves are run, and they will study the properties of the circle. Algebra and geometry will be used together.

June: The effect of the Civil War on the South, and the industrial development of the country.

The pupils will continue the study of simple geometrical questions growing out of railroading—grading and embankments, bridges; geometrical study of forces.

REFERENCES (for March): Hammond, *Cotton Industry, Britannica;* Fiske, *Old Virginia and Her Neighbors, Harper's Monthly,* Vol. LXXXVI, November, 1891; Bancroft, *History of the United States;* Winsor, *Narrative and Critical History of America;* McMaster, *History of the United States;* Schouler, *History of the United States.*

REFERENCES (for April): Ridpath, *History of the United States;* Montgomery, *History of the United States;* Fiske, *History of the United States;* Roosevelt, *Winning of the West;* Drake, *The Making of the Great West;* Blanchard, *Discovery and Conquest of the Northwest;* Parkman, *La Salle and the Discovery of the Northwest;* Parkman, "Address on Northwest Territory," *Old South Leaflets,* No. 42; Carr, "Missouri;" Jones, *Lewis and Clarke Expedition; Wonderland,* for 1900, published by the Northern Pacific Railroad, on Lewis and Clarke; "Early Settlements in the West," *Harper's,* Vol. LXXI, p. 552; "On the Outpost in 1780," *ibid.,* Vol. LXXVI, p. 420; "Kentucky," *ibid.,* Vol. LXXVIII, p. 255; "Texas," *ibid.,* Vol. LXXXVII, p. 561; "California in 1850," *ibid.,* Vol. XXV, pp. 306 and 593; "Mining," *ibid.,* Vol. LX, p. 380; "Mining," *ibid.,* pp. 145 and 289; "Goldwashing," *ibid.,* Vol. XLV, p. 445; "In the Wahlamet Valley," *ibid.,* Vol. LXV, p. 764.

REFERENCES (for May): "Canadian Pacific Railway," *Harper,* Vol. LXV, pp. 414; "Transportation," *ibid.,* Vol. LX, p. 579; "American Railroads," *ibid.,* Vol. XLIX, p. 375; Rhodes, *History of the United States from 1850;* Fiske, *History of the United States;* Smith, *History of the United States;* Spring, *Kansas;* Robinson, *The Kansas Conflict;* E. E. Hale, *Kansas and Nebraska in 1854;* Schurz, *Henry Clay;* Lamon, *Life of Lincoln;* Morse, *Life of Lincoln;* Tarbell, *Life of Lincoln;* Johnson, *History of the War of Secession; Outlook,* for 1902; *Review of Reviews,* for 1902; Hall, *Cuba and Puerto Rico;* Davy, *Cuba, Past and Present;* Dinwiddi, *Puerto Rico: Its Conditions and Possibilities;* Stevens, *Yesterday in the Philippines;* Forman, *The Philippine Islands and Their People;* Worcester, *The Philippine Islands and Their People;* Sawyer, *Inhabitants of the Philippine Islands.*

REFERENCES (for June): Ropes of the Civil War; Rhodes, *History of the United States from 1850;* Wright, *Industrial Evolution of the United States;* Hammond, *Cotton Industry;* Carpenter, *Geographical Reader.*

Literature.—The class will study the play *Julius Cæsar.*

Geography.—The work in history demands a knowledge of the Louisiana territory, Oregon, Texas, and California. The geography in this connection

will consist of a detailed study of that portion of the United States lying west of the Mississippi river.

The study of the development of railroads in the United States will be followed by a study of railways in general. Attention will be given to Cuban railways and a special investigation of the Trans-Siberian Railway will be made. This work will include not only a study of the railway, but a study of the surrounding country tributary to the railway.

Geography will form an important part of the study of all current events. The correspondence with pupils in foreign countries will be continued.

REFERENCES: Reclus, *Stanford's Compendium of North America; The Earth and Its Inhabitants;* Mills, *International Geography;* Dana and Davis, *Mississippi Valley;* Shaler, *Story of Our Continent;* Shaler, *United States of America;* King, *Up the Mississippi Valley; Journal of School Geography*, December, 1901.

Railroads: "Cuban Railways," *National Geographic Magazine*, March, 1902; "A Trip through Siberia," *ibid.*, February, 1902; Stanford, *Compendium of Asia;* Reclus, "Asia," *Earth and Its Inhabitants;* Mills, *International Geography.*

Current Events: *The Little Chronicle; The Great Round World; The Outlook.*

Nature Study and Related Mathematics.— 1. The work already begun in March will continue throughout the year. As in the fall the pupils studied the distribution of seeds and the decay of plants, so now they will study the renewal of life. This subject presents itself in two aspects, the natural plants uninfluenced by man and plants cultivated by man in the garden or in the field. It is this latter phase we shall take up first. To this end the pupils will plant and care for their own garden, located south of the school building. (See diagram, March issue, p. 495.) They will visit vegetable gardens and farms near the city, and compare the spring industries with the work they saw done in October.

They will then make a study of the topography of a certain area. The work will begin with a general view of the subject, followed by a detailed study of the area chosen. The area will be plotted to scale by the aid of the plane table, all objects, as trees, buildings, etc., having a bearing on the study will be located from measurements on a topographic map. This will call for considerable practical geometry, which will be taught with as much fullness as the development of the subject of study demands. The apparatus used will consist of the simple plane table illustrated and described in the COURSE OF STUDY, Vol. I, No. 7, p. 667, Experiment No. 5 (*b*); of surveyors' chains, compasses and transits.

2. The materials for study will be gathered from the sources named. The work will center on certain features, light, soil, heat, and moisture, which are necessary to growth. (1) Climate: (*a*) increase of temperature; (*b*) change in the slant of the sun's rays. The pupils will find the relation of the change of angle to the weekly increase of temperature. They will determine the ratio upon which the variation of the intensity of light and heat depends. This will call for a detailed study of the right angle. (2)

Soils: kinds; their locations, properties, and probable origins. (3) Moisture: amount of rainfall on a given area as compared with the average amount of rainfall on the same area for thirty-two years. What becomes of the water? Its action on soil (erosion, solution). Movement.

3. The pupils will make weekly charts containing: (1) List of trees that show the first evidences of growth. (2) List of plants on the ground that show the first evidences of growth. (3) First appearance of animal life. (4) Average weekly temperature. The average weekly temperature will be plotted on cross-barred paper to bring this out clearly. As the first animals appear, the pupils will observe the available food supply. They will be questioned as to their opinion regarding the winter habits of these animals.

Each pupil will select a tree and a plant for continued study. He will find out by experiment what kind of food plants use, and how the plant he is studying obtains this food. He will show, by paintings and drawings, the structure and position of the leaves in response to their light relations. Comparison of class results will enable the pupils to see the various ways in which plants maintain themselves. As flowering begins we shall take up the study of plant reproductions.

REFERENCES: Coulter, *Plant Structure* and *Plant Relations;* Kerner and Oliver. *The Natural History of Plants;* Gay, *The Great World Farm;* King, *The Soil;* Gray, *Physiological Botany* and *Structural Botany;* Bergen, *Elements of Botany;* Sir John Lubbock, *Seedlings;* Herrick, *Chapters on Plant Life;* Bailey, *Talks Afield;* Wright, *Birdcraft;* Miller, *Birds Through an Opera Glass;* Mathews, *Familiar Trees and Leaves* and *Flowers of Field and Garden;* Jordan and Kellogg, *Animal Life;* Comstock, *Insect Life.*

Physical training.—(See seventh grade).

MORNING EXERCISES.

KATHARINE M. STILWELL.

		LEADER.
April 1.	Nature Study	Mr. Jackman
2.	Songs	Mrs. Bradley
3.	Stories of Hunter Life	Miss Mitchell
4.	City of Washington	Miss Stilwell
8.	Spring	Mr. I. B. Meyers
9.	Songs	Mrs. Bradley
10.	March Exercises	Mr. Kroh
11.	Wood	Miss Van Hoesen
15.	The Dryad	Miss Curtis
16.	Songs	Mrs. Bradley
17.	Nature Observations	Mrs. Atwood
18.	Cereals	Mrs. Thomsen
22.	Friedrich Froebel	Miss Allen
23.	Songs	Mrs. Bradley
24.	Bread	Mrs. Norton
25.	French Games	Miss Ashléman
29.	Nature Study	Mr. Jackman
30.	A Playhouse	Miss Wygant

NEW PUBLICATIONS.

Annual Report of the Smithsonian Institution, 1900, pp. lxv +759.

Lippincott's Educational Series, Vol. I, Thinking and Learning to Think. By Nathan T. Schaeffer, Ph.D., LL.D., superintendent of public instruction for the state of Pennsylvania. Size, 5 × 7½ in.; pp. 351. Vol. III, History of Education. By E. L. Kemp, A. M., professor of pedagogy, State Normal School, East Stroudsburg, Pa. Pp. 385. Philadelphia: J. H. Lippincott Co.

The Foundations of Education. By Levi Seeley, Ph.D., professor of the science and art of education in the New Jersey State Normal School. Size, 5 × 7½ in.; pp. xi + 263. Price, $1. New York: Hinds & Noble.

Lessons in Manners. Arranged for grammar schools, high schools, and academies. By Julia M. Dewey, author of "How to Teach Manners," and "Ethics for Home and School." Size, 5 × 6½ in.; pp. viii + 141. Price, 75 cents. New York: Hinds & Noble.

Jean Mitchell's School: A Story. By Angelina W. Wray. Illustrated by Amy Orcutt Brown. Size, 5½ × 7¾ in.; pp. 244. Price, $1.25. Bloomington, Ill.: Public-School Publishing Co.

The Art of Teaching. A Manual for Teachers, Superintendents, Teachers' Reading Circles, Normal Schools, Training Classes, and persons interested in the right training of the young. By Emerson E. White, A.M., LL.D., author of a series of mathematics, "Elements of Pedagogy," "School Management," etc. Size, 5 × 7½ in.; pp. xv + 306. American Book Co.

First Years in Handicraft. By Walter J. Kenyon, State Normal School, San Francisco, Cal. Size, 5¾ × 8 in.; pp. viii + 124. New York: The Baker & Taylor Co.

American Political History: To the Death of Lincoln. Popularly told by Viola A. Conklin. Size, 5 × 7¾ in.; pp. xv. + 435. Price, $1.50. New York: Henry Holt & Co.

Elementary Experimental Chemistry: Inorganic. Completely illustrated with full-page engravings of all the apparatus and chemicals used in experiments. For students in high schools and junior classes in colleges, and private learners. By W. F. Watson, A.M., professor of chemistry and biology in Furman University, South Carolina. Size, 5 ½ × 8 in.; pp. xiii + 320. Price, $1.25. New York: A. S. Barnes & Co.

Forces in Fiction, and Other Essays. By Richard Burton. Size, 5 × 7¾ in.; pp. 177. Indianapolis: The Bowen Merrill Co.

Wagner Opera Stories. By Grace Edson Barber. Size, 5 × 7½ in.; pp. 191. Bloomington, Ill.: Public-School Publishing Co.

Nature's Miracles: Familiar Talks on Science. By Elisha Gray, Ph.D., LL.D. Vol. I, World Building and Life: Earth, Air, and Water. Vol. II, Energy and Vibration: Energy, Sound, Heat, Light, Explosives. Vol. III, Electricity and Magnetism. Size, 4¼ × 6½ in.; 250 pp. each volume. Price, 60 cents a volume. New York: Fords, Howards & Hurlbert.

Elementary Inductive Geography. By Mary R. Davis and Charles W. Deane, Ph.D. (For third, fourth, and fifth grades.) Size, 7¼ × 9½ in.; pp. 228. Price, 72 cents. New York: Potter & Putnam Co.

The Natural Arithmetic. By Isaac O. Winslow, A.M., principal of Thayer Street Grammar School, Providence, R. I. Size, 5 × 7½ in.; pp. Book I, 256; Book II, 271; Book III, 303. American Book Co.

A Primary History of the United States. By John Bach McMaster, professor of American history in the University of Pennsylvania. Size, 5¾ × 7½ in.; pp. 254. American Book Co.